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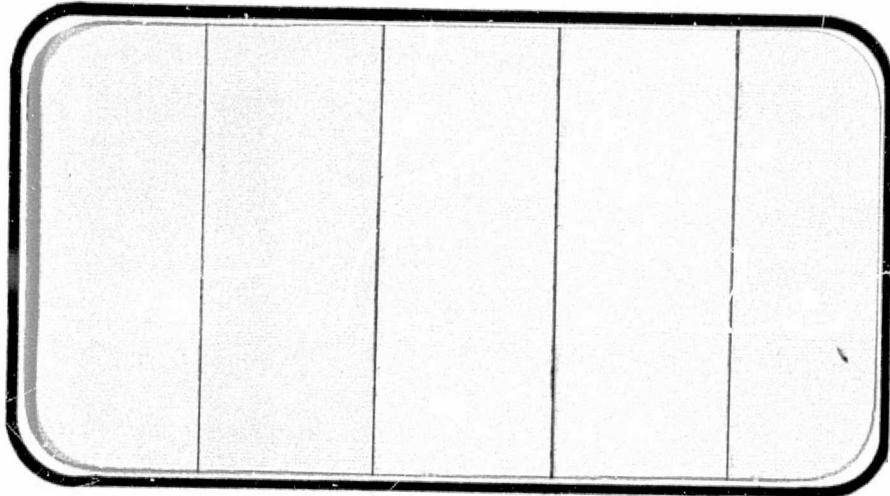
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# NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA CR-  
141805



(NASA-CR-141805) RESULTS OF INVESTIGATIONS  
ON A 0.010-SCALE 140A/B CONFIGURATION SPACE  
SHUTTLE VEHICLE ORBITER MODEL 72-0 IN THE  
NASA/LANGLEY RESEARCH CENTER CONTINUOUS FLOW  
HYPERSONIC TUNNEL (CA90) (Chrysler Corp.)

N75-30247

G3/18 34995

Unclassified



SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER  
HOUSTON, TEXAS

DATA MANAGEMENT services  
SPACE DIVISION  CHRYSLER  
CORPORATION

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RESULTS OF INVESTIGATIONS ON A 0.010-SCALE  
140A/B CONFIGURATION SPACE SHUTTLE VEHICLE ORBITER  
MODEL 72-0 IN THE NASA/LANGLEY RESEARCH CENTER  
CONTINUOUS FLOW HYPERSONIC TUNNEL (OA90)

by

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Prepared under NASA Contract Number NAS9-13247

by

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for

Engineering Analysis Division

Johnson Space Center  
National Aeronautics and Space Administration  
Houston, Texas



WIND TUNNEL TEST SPECIFICS:

Test Number: LaRC CFHT 110  
NASA Series Number: OA90  
Model Number: 72-0  
Test Dates: March 4 through March 6, 1974

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RESULTS OF INVESTIGATIONS ON A 0.010-SCALE  
140A/B CONFIGURATION SPACE SHUTTLE VEHICLE ORBITER MODEL 72-0  
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by P. J. Hawthorne, Rockwell International Space Division

ABSTRACT

This report documents data obtained during a wind tunnel test of a 0.010-scale 140A/B configuration SSV Orbiter in the NASA/Langley Research Center Continuous Flow Hypersonic Tunnel. The test was conducted beginning 4 March and ending 6 March 1974 for a total of 24 occupancy hours. All test runs were conducted at a Mach number of 10.3 and at Reynolds numbers of 0.65, 1.0 and 1.33 million per foot. Only the complete 140A/B was tested with various elevon, speedbrake and bodyflap settings at angles of attack from 12 to 37 degrees at 0 and -5 degrees of beta, and from 0 to -9 degrees of beta at 20 and 30 degrees angle of attack.

The purpose of this test was to obtain hypersonic longitudinal and lateral-directional stability and control characteristics of the updated SSV configuration.

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## INDEX OF DATA FIGURES (Concluded)

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### SCHEDULE OF COEFFICIENTS PLOTTED:

- (A) CN, CA versus ALPHA  
 CN versus CLM  
 CL, CD, CLM versus ALPHA  
 CL versus CLM  
 CD versus CL  
 XCP/L, L/D versus ALPHA
- (B) CY, CYN, CBL versus ALPHA
- (C) CY, CYN, CBL versus BETA

NOMENCLATURE  
General

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C <sub>p</sub>	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m <sup>2</sup> , psf
q	Q(NSM) Q(PST)	dynamic pressure; $1/2\rho V^2$ , N/m <sup>2</sup> , psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
$\alpha$	ALPHA	angle of attack, degrees
$\beta$	BETA	angle of sideslip, degrees
$\psi$	PSI	angle of yaw, degrees
$\phi$	PHI	angle of roll, degrees
$\rho$		mass density; kg/m <sup>3</sup> , slugs/ft <sup>3</sup>

Reference & C.G. Definitions

A <sub>b</sub>		base area; m <sup>2</sup> , ft <sup>2</sup>
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
$l_{\text{REF}}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m <sup>2</sup> , ft <sup>2</sup>
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
$\infty$	free stream

(1)

NOMENCLATURE (Continued)

Body-Axis System

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
$C_N$	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
$C_A$	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
$C_Y$	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
$C_{A_b}$	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
$C_{A_f}$	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
$C_m$	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS_f \text{REF}}$
$C_n$	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS_b}$
$C_\ell$	CEL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS_b}$

Stability-Axis System

$C_L$	CL	lift coefficient; $\frac{\text{lift}}{qS}$
$C_D$	CD	drag coefficient; $\frac{\text{drag}}{qS}$
$C_{D_b}$	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
$C_{D_f}$	CDF	forebody drag coefficient; $C_D - C_{D_b}$
$C_Y$	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
$C_m$	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS_f \text{REF}}$
$C_n$	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS_b}$
$C_\ell$	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS_b}$
L/D	L/D	lift-to-drag ratio; $C_L/C_D$
$L/D_f$	L/DF	lift to forebody drag ratio; $C_L/C_{D_f}$

(1)

**NOMENCLATURE (Concluded)**  
**(ADDITIONS)**

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
$\delta_e$	ELEVTR	effective elevator deflection, symmetrical elevon deflection for pitch control, degrees
$\delta_a$	AILRON	aileron, total aileron deflection angle, (left aileron-right aileron)/2, degrees
$\delta_{BF}$	BDFLAP	bodyflap deflection, positive trailing edge down, degrees
$\delta_{SB}$	SPDBRK	speedbrake deflection, total angle measured parallel to the FRL, degrees
$\delta_R$	RUDDER	rudder deflection angle
U	.	outer elevon gaps unsealed
S	.	outer elevon gaps sealed
$X_{cp}/\ell_B$	XCP/L	normal force center of pressure in percent of body reference length measured from IML nose

## CONFIGURATION INVESTIGATED

Throughout test OA90, the full 140A/B hybrid configuration Space Shuttle Vehicle Orbiter was used.

Model 72-0 dimensional data are given for the 140A/B configuration components in Table III of this report.

The tested configuration included the following components:

- B<sub>26</sub> Basic 140A/B configuration fuselage
- C<sub>9</sub> Basic 140A/B configuration canopy
- W<sub>116</sub> Basic 140A/B configuration wing
- E<sub>37</sub> E<sub>26</sub> (basic 140A/B) elevons with chamfered gaps and inboard edge
- V<sub>8</sub> Basic 140A/B configuration vertical tail
- R<sub>5</sub> Basic 140A/B configuration rudder for V<sub>8</sub>
- M<sub>7</sub> Basic 140A/B configuration OMS/RCS pods
- N<sub>28</sub> Basic 140A/B configuration OMS engine nozzles
- F<sub>10</sub> 140A/B bodyflap

## TEST FACILITY DESCRIPTION

The Mach 10 nozzle of the Langley continuous flow hypersonic tunnel is designed to operate at stagnation pressures of 15 to 150 atmospheres at temperatures up to 1960°R. Air is preheated electrically by passing through a multi-tube heater. The nozzle has a 31-inch square test section which incorporates a movable second minimum. Continuous operation is achieved by passing the air through a series of compressors. Additional information on this facility is given in NASA TM X-1130 entitled, "Characteristics of Major Active Wind Tunnels at the Langley Research Center," by William T. Schaefer, Jr.

①

## DATA REDUCTION

The LaRC 2019 balance was used to measure Orbiter forces and moments at three Reynolds numbers. Data were converted to standard NASA force and moment coefficients and are presented about the moment reference center of  $X_0 = 1076.7$ ,  $Y_0 = 0$ ,  $Z_0 = 375$  inches full scale. Data are presented in both stability and body axis systems.

Additionally, the normal force center of pressure is presented:

$$X_{cp}/\ell_B = \frac{X_{CG}}{\ell_B} - \frac{C_m (\bar{c}_w)}{C_N \ell_B}$$

where  $X_{cp}$  is the longitudinal distance from the inner mold line nose station ( $X_0 = 238$  inches full scale) to the center of pressure.

The reference dimensions and constants utilized were as follows:

<u>Symbol</u>	<u>Definition</u>	<u>Value</u>
$b_w$	reference wing span	936.7 in
$\bar{c}_w$	reference MAC	474.8 in
$\ell_B$	reference body length	1290.0 in
$S_w$	reference wing area	2690 ft <sup>2</sup>
$X_{CG}$	longitudinal length, nose to Moment Reference Center	838.7 in
XMRP	longitudinal length to Moment Reference Center	1076.7 in
YMRP	lateral length, plane of symmetry to Moment Reference Center	0 in
ZMRP	vertical length, FRP to Moment Reference Center	375.0 in

②

REMARKS

It was decided not to utilize the HCF 09 balance at the start of the test program due to time constraints, and consequently no data were obtained at a Reynolds number of  $2.2 \times 10^6$  per foot as delineated in the pretest report. In compromise, data were obtained at a Reynolds number of  $1.33 \times 10^6$  per foot, which corresponds to the maximum safe loading of the LaRC 2019 balance.

At the lower end of the scale, it was found that  $RN/L = 0.65 \times 10^6$  per foot was the lowest value of the parameter where there was reasonable assurance of maintaining flow.

TABLE I.

TEST #: OA 90

DATE : 4-6 Mar 74

## TEST CONDITIONS

**BALANCE UTILIZED:**

LaRC 2019

	CAPACITY:	ACCURACY:	COEFFICIENT TOLERANCE:
NF	70 lbf	0.5%	
SF	25 lbf	0.5%	
AF	15 lbf	0.5%	
PM	70 in lbf	0.5%	
RM	15 in lbf	0.5%	
YM	25 in lbf	0.5%	

COMMENTS: Utilized with sting 17D ( $20^\circ$  pre bend)

TABLE II.

TEST: OA - 90		DATA SET / RUN NUMBER COLLATION SUMMARY							DATE: 4-6 MAR 74			
DATA SET IDENTIFIER	CONFIGURATION	SCHD.	PARAMETERS/VALUES						RN/L X 10 <sup>6</sup> /ft	NO. OF RUNS	MACH NUMBERS	
			$\alpha$	$\beta$	S <sub>a</sub>	S <sub>e</sub>	S <sub>DE</sub>	S <sub>SB</sub>			10.3	
RQ5001	BASIC	A	0	0	0	0	0	55	U	17	14	2
	002		-5	0	0	0	0	55	S	15		1
	003		0	0	0	0	0	55	S	19		1
	004		1.5	0	0	0	0	55	S	20		1
	005		20.3	0	0	0	0	55	U	23		1
	006		30.3	0	0	0	0	55	U	24		1
	007		A	0	0	0	0	85	U	25		1
	008		-5	0	0	0	0	85	U	26		1
	009		0	0	0	0	0	85	S	27		1
	010		5	0	0	0	0	85	S	28		1
	011		0	0	0	0	-11.7	55	U	13		1
	012		0	0	0	0	+16.3	55	U	12		1
	013		0	0	10	0	+16.3	55	S	6	10	2
	014		5	0	10	0	+16.3	55	S	7	11	2
	015		0	0	10	0	+16.3	55	U	8		1
	016		-5	0	10	0	+16.3	55	U	9		1
	017		0	0	15	0	+16.3	55	U	41	38	39
	018		0	0	15	0	+16.3	55	S	42		1

1      7      13      19      25      31      37      43      49      55      61      67      75 76  
 BETA, GN., GA., GLM., GBL., GYN., GY., GL., GD., L/D., RN/L., I., ., 10  
 COEFFICIENTS      IDVAR (1)      IDVAR (2)      NCV  
 $\alpha$  OR  $\beta$        $\Delta A = 12, 16, 20, 24, 28, 32, 36$       OUTL.  $S_p = 0$   
 SCHEDULES       $\Delta B = 0, 1, -3, -5, -7, -9$       ELEVATION GAPS: S = SCALED, U = UNSCALED

TABLE II - CONCLUDED

TEST: OA-90		DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 4-6 MAR 74				
DATA SET IDENTIFIER	CONFIGURATION	SCHD.	PARAMETERS/VALUES						RN/L X 10 <sup>6</sup> ft			NO. OF RUNS	MACH NUMBERS			
			$\alpha$	$\beta$	$S_d$	$S_e$	$S_{dp}$	$S_{sb}$	GAPS	0.65	1.03	1.33	10.3	11.0	11.7	
RQJ 019	BASIC	A	0	0	-10	-11.7	55		U		36		1			
1 020			0	0	-20	-11.7	55		U		35		1			
021			0	0	-40	-11.7	55		U	32	31		2			
022			0	0	-40	-11.7	55		S		33		1			
023			-5	0	-40	-11.7	55		S		34		1			
024			0	<sup>+10</sup> -55	0	0	55		U		44		1			
025			0	<sup>+10</sup> -102	0	0	55		U		37		1			
1 026			0	<sup>+15</sup> -152	0	0	55		U		43		1			
RQJ 201			0	0	0	0	55		U	47	45		2			
RQJ 221			0	0	0	0	55		U		21		1			
RQJ 202			-5	0	0	0	55		U		46		1			
RQJ 222			-5	0	0	0	55		U		22		1	1		
1	7	13	19	25	31	37	43	49	55	61	67	75	76			
RN/L																
$\alpha$ OR $\beta$ SCHEDULES		COEFFICIENTS										$S_p = 0$	ICAR 111 E 4R 121 4C1			
$\alpha/\beta = 12, 16, 20, 24, 28, 32, 36$ OUTER ELEVON GAPS: S = SEALED U = UNSEALED																

TEST RUN NUMBERS

TABLE III.  
MODEL DIMENSIONAL DATA

MODEL COMPONENT : BODY = B<sub>26</sub>

GENERAL DESCRIPTION : Configuration 140A/B Orbiter fuselage

B<sub>26</sub> is identical to B<sub>24</sub> except that the underside of the fuselage has been refaired to accept the W<sub>116</sub> wing.

MODEL SCALE: 0.010 MODEL DRAWING: SS-A01195

DRAWING NUMBER VI70-000143B, 00200 REVISED, -00205, -006089, -000145,  
VT70-000140A, -000140B, SS-A00130

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (Body Fwd Sta X <sub>0</sub> =235)	In. <u>1293.3</u>	<u>12.933</u>
Max Width (at X <sub>0</sub> = 1520) - In.	<u>262.0</u>	<u>2.620</u>
Max Depth (at X <sub>0</sub> = 1464) - In.	<u>250.0</u>	<u>2.500</u>
Fineness Ratio	<u>0.2636</u>	<u>0.2636</u>
Area - Ft <sup>2</sup>	<u>-----</u>	<u>-----</u>
Max. Cross-Sectional	<u>340.88</u>	<u>0.03408</u>
Planform	<u>-----</u>	<u>-----</u>
Wetted	<u>-----</u>	<u>-----</u>
Base	<u>-----</u>	<u>-----</u>

TABLE III (CONT'D)  
MODEL DIMENSIONAL DATA

MODEL COMPONENT : CANOPY - C<sub>9</sub>

GENERAL DESCRIPTION Configuration 140A/B Orbiter Canopy

MODEL SCALE: 0.010 MODEL DRAWING: SS-A01195, RELEASE 3

DRAWING NUMBER VL7Q-000143B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ( $X_0=434.643$ to 578) - In.	<u>143.357</u>	<u>1.434</u>
Max Width (@ $X_0 = 513.127$ ) - In.	<u>152.412</u>	<u>1.524</u>
Max Depth (@ $X_0 = 485.0$ ) - In.	<u>25.000</u>	<u>0.250</u>
Fineness Ratio	_____	_____
Area	_____	_____
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

TABLE III (CONT'D)

MODEL COMPONENT: WING-W116

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Wing. NOTE: Identical to W114 except airfoil thickness. Dihedral angle is along trailing edge of wing.

MODEL SCALE: 0.010

TEST NO.

DWG. NO. VL70-000200 REVISED,  
-006089, -006092

## DIMENSIONS:

## TOTAL DATA

Area (Theo.) Ft<sup>2</sup>

Planform

Span (Theo) In.

Aspect Ratio

Rate of Taper

Taper Ratio

Dihedral Angle, degrees

Incidence Angle, degrees

Aerodynamic Twist, degrees

Sweep Back Angles, degrees

Leading Edge

Trailing Edge

0.25 Element Line

Chords:

Root (Theo) B.P.O.O.

Tip, (Theo) B.P.

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

## EXPOSED DATA

Area (Theo) Ft<sup>2</sup>

Span, (Theo) In. BP108

Aspect Ratio

Taper Ratio

Chords

Root BP108

Tip 1.00  $\frac{b}{2}$ 

MAC

Fus. Sta. of .25 MAC

W.P. of .25 MAC

B.L. of .25 MAC

Airfoil Section (Rockwell Mod NASA) XXXX-64

Root  $\frac{T}{C}$  = $\frac{1}{2}$ Tip  $\frac{T}{C}$  = $\frac{1}{2}$ 

Data for (1) of (2) Sides

Leading Edge Cuff

Planform Area Ft<sup>2</sup>

Leading Edge Intersects Fus M.L. @ Sta

Leading Edge Intersects Wing @ Sta

## FULL-SCALE

## MODEL SCALE

2690.00

0.269

936.682

9.367

2.265

2.265

1.177

1.177

0.200

0.200

3.500

3.500

0.500

0.500

+ 3.000

+ 3.000

45.000

45.000

-10.056

-10.056

35.209

35.209

689.243

6.892

137.847

1.378

474.812

4.748

1136.83

11.368

290.58

2.906

182.13

1.821

1751.5

0.1751

720.68

7.206

2.058

2.058

0.245

0.245

562.09

5.62

137.847

1.378

392.83

3.928

1185.98

11.859

294.3

2.943

251.77

2.517

0.113

0.113

0.12

0.12

TABLE III (CONT'D)

## MODEL DIMENSIONAL DATA

MODEL COMPONENT: ALTERNATE SLOTTED ELEVON - E

37

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Elevon

E is a slotted version of E<sub>26</sub>. Data is for one side.

37

26

MODEL SCALE: 0.010

MODEL DRAWING: SS-A00147, RELEASE 12

DRAWING NUMBER: VL70-000200, -006089, -006092 and Fig. 4A of SAS/AERO/76-643

## DIMENSIONS:

	FULL-SCALE	MODEL SCALE
Area - Ft <sup>2</sup>	210.0	0.021
Span (equivalent) - In.	349.2	3.492
Inb'd equivalent chord - In.	118.004	1.118
Outb'd equivalent chord - In.	55.192	0.552
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.2096	0.2096
At Outb'd equiv. chord	0.4004	0.4004
Sweep Back Angles, degrees		
Leading Edge	0.00	0.00
Tailing Edge	-10.056	-10.056
Hingeline	0.00	0.00
Area Moment (Normal to hinge line) Ft <sup>3</sup>	1587.25	0.0016

TABLE III (CONT'D)

## MODEL DIMENSIONAL DATA

MODEL COMPONENT: VERTICAL - V<sub>8</sub>

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Vertical Tail

MODEL SCALE: 0.010

MODEL DRAWING: SS-401195, RELEASE 3

DRAWING NUMBER:

VL70-000146A

## DIMENSIONS:

## FULL-SCALE

## MODEL SCALE

TOTAL DATA

Area (Theo) - Ft <sup>2</sup>		
Planform	413.253	0.04133
Span (Theo) In	315.720	3.157
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.404	0.404
Sweep Back Angles, degrees		
Leading Edge	45.000	45.000
Trailing Edge	25.947	25.947
0.25 Element Line	41.130	41.130
Chords:		
Root (Theo) WP	268.500	2.685
Tip (Theo) WP	108.470	1.085
MAC	199.808	1.998
Fus. Sta. of .25 MAC	1463.50	14.635
W. P. of .25 MAC	635.522	6.352
B. L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle Deg	10.00	10.00
Trailing Wedge Angle Deg	14.920	14.920
Leading Edge Radius	2.00	0.020
Void Area	13.17	0.0013
Blanketed Area	0.00	0.00

TABLE III (CONT'D)

## MODEL DIMENSIONAL DATA

MODEL COMPONENT: RUDDER - R<sub>5</sub>

GENERAL DESCRIPTION: Configuration 140A/B Orbiter Rudder

MODEL SCALE: 0.010

MODEL DRAWING: SS A01195, RELEASE 3

DRAWING NUMBER: VL70-000146A

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft <sup>2</sup>	106.38	0.01064
Span (equivalent) - In.	201.0	2.010
Inb'd equivalent chord In.	91.585	0.916
Outb'd equivalent chord - In.	50.833	0.508
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	0.400	0.400
At Outb'd equiv. chord	0.400	0.400
Sweep Back Angles, degrees		
Leading Edge	34.83	34.83
Trailing Edge	26.25	26.25
Hingeline	34.83	34.83
Area Moment (normal to hinge line) Ft <sup>3</sup>	526.13	0.000526

TABLE III (CONT'D)  
MODEL DIMENSIONAL DATA

MODEL COMPONENT : OMS/RCS PODS - M

GENERAL DESCRIPTION : Configuration 140A/B Orbiter OMS/RCS pods

MODEL SCALE: 0.010

DRAWING NUMBER : VL70-000145 MODEL DRAWING: SS-A01195, RELEASE 3

DIMENSIONS	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta $X_0 = 1233.0$ ) In.	<u>327.000</u>	<u>3.270</u>
Max Width (@ $X_0 = 1450.0$ ) In.	<u>.9450</u>	<u>0.945</u>
Max Depth (@ $X_0 = 1493.0$ ) - In.	<u>109.00</u>	<u>1.090</u>
Fineness Ratio	_____	_____
Area	_____	_____
Max. Cross-Sectional	_____	_____
Planform	_____	_____
Wetted	_____	_____
Base	_____	_____

TABLE III (CONT'D)  
MODEL DIMENSIONAL DATA

MODEL COMPONENT: OMS NOZZLES - N<sub>28</sub>

GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS Nozzles.

MODEL SCALE: 0.010

DRAWING NO.: VL70-000140A (Location), SS-A00106, RELEASE 5 (Contour)

FULL SCALE DIMENSIONS:

GIMBAL ORIGIN:	$x_o$	$y_o$	$z_o$
Left Nozzle - In.	1518.0	- 88.0	492.0
Right Nozzle - In.	1518.0	+ 88.0	492.0
NUL POSITION:	$\Delta PITCH$	$\Delta YAW$	
Left Nozzle (Null Pitch 15°49'; Yaw 12°17' OUTB'D)	± 8	13°17' 2°30'	OUTB'D INB'D
Right Nozzle (Null Pitch 15°49'; Yaw 12°17' OUTB'D)	± 8	13°17' 2°17'	OUTB'D INB'D

TABLE III (CONCL'D)

## MODEL DIMENSIONAL DATA

MODEL COMPONENT: BODY FLAP - F<sub>10</sub>GENERAL DESCRIPTION: Vehicle 4 body flap with hingeline at X<sub>0</sub> = 1532,Z<sub>0</sub> = 287.MODEL SCALE: 0.010DRAWING NUMBER: VL70-000140B, 140C  
VL70-000200, 200A\*\*

<u>DIMENSIONS:</u>	<u>FULL-SCALE</u>	<u>MODEL SCALE</u>
Area - Ft <sup>2</sup>	<u>133.71</u>	<u>0.01337</u>
Span (equivalent) - In.	<u>255.42</u>	<u>2.554</u>
Inb'd equivalent chord - In.	<u>81.00</u>	<u>0.810</u>
Outb'd equivalent chord - In.	<u>81.00</u>	<u>0.810</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>1.00</u>	<u>1.00</u>
At Outb'd equiv. chord	<u>1.00</u>	<u>1.00</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.0</u>	<u>0.0</u>
Trailing Edge	<u>0.0</u>	<u>0.0</u>
Hingeline	<u>0.0</u>	<u>0.0</u>
Area Moment (Normal to hinge line)-Ft <sup>3</sup>	<u>439.92</u>	<u>0.0004399</u>
**Hingeline shown on -200, -200A drawing is inconsistent with Configuration Control Drawing and should be ignored. Planform dimensions have been utilized.		
Maximum height - In.	<u>20.6</u>	<u>0.206</u>
Base Area - Ft <sup>2</sup>	<u>36.53</u>	<u>0.003653</u>

**Notes:**

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrows
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

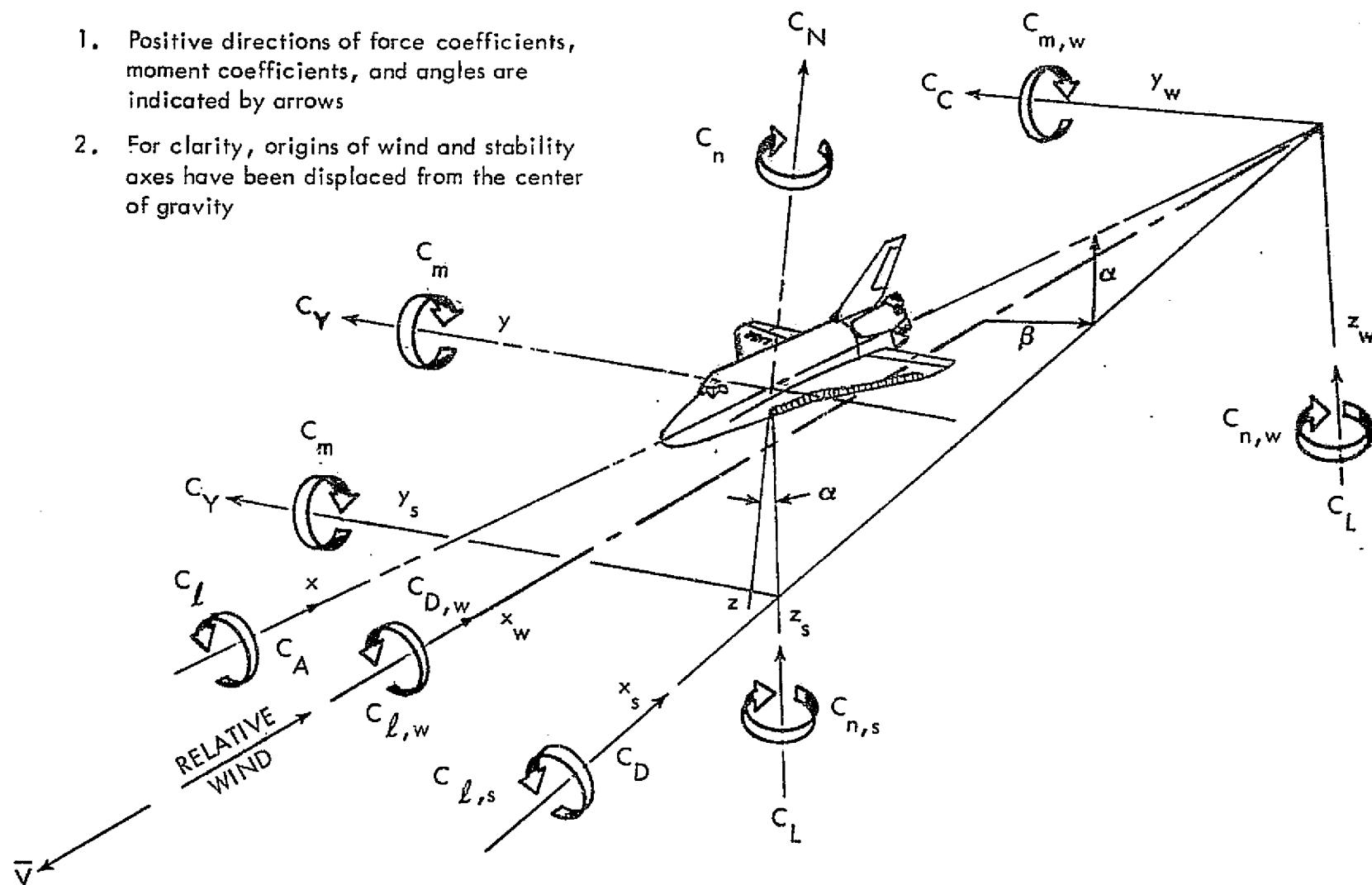


Figure 1. - Axis systems.

25

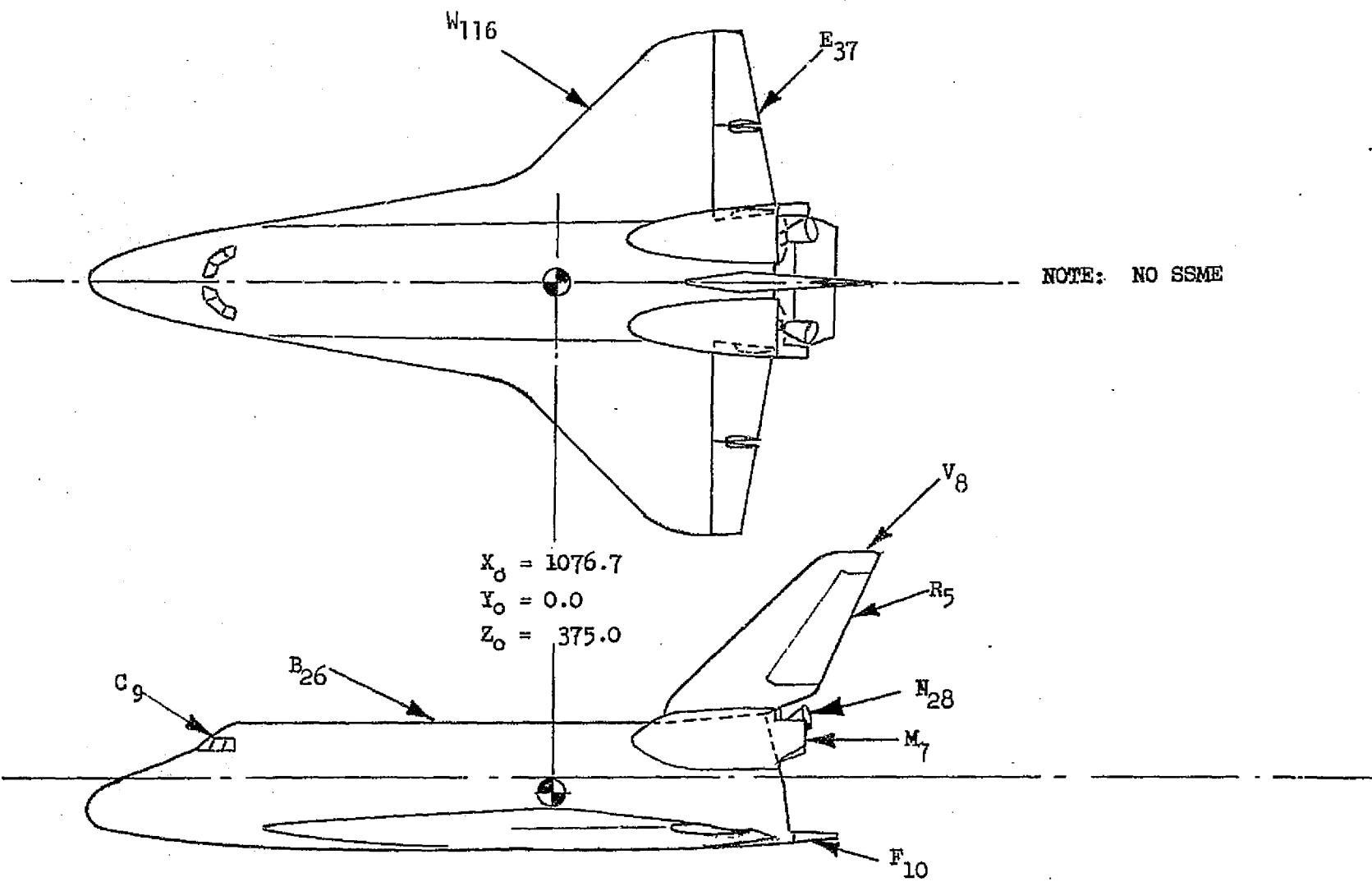
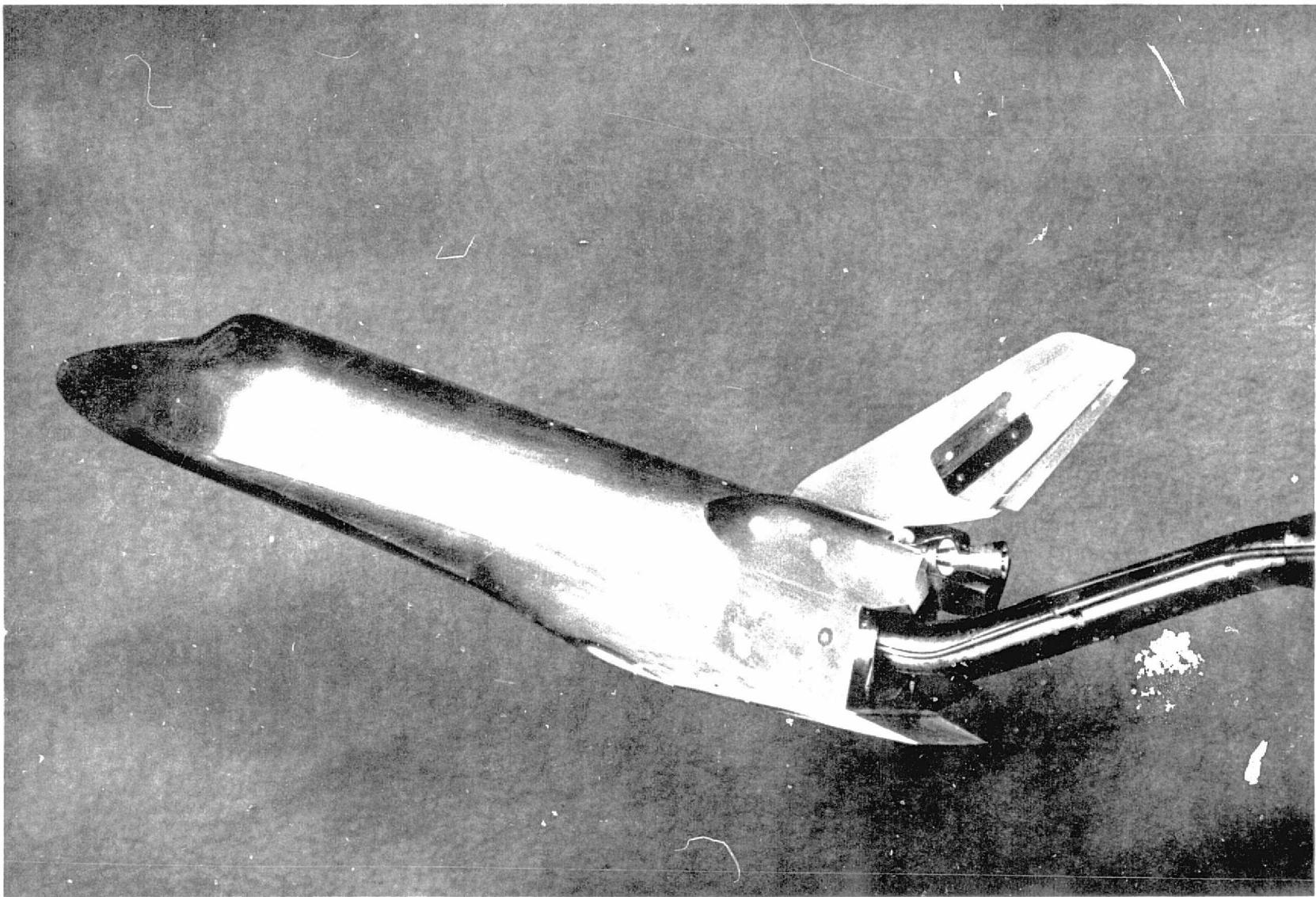
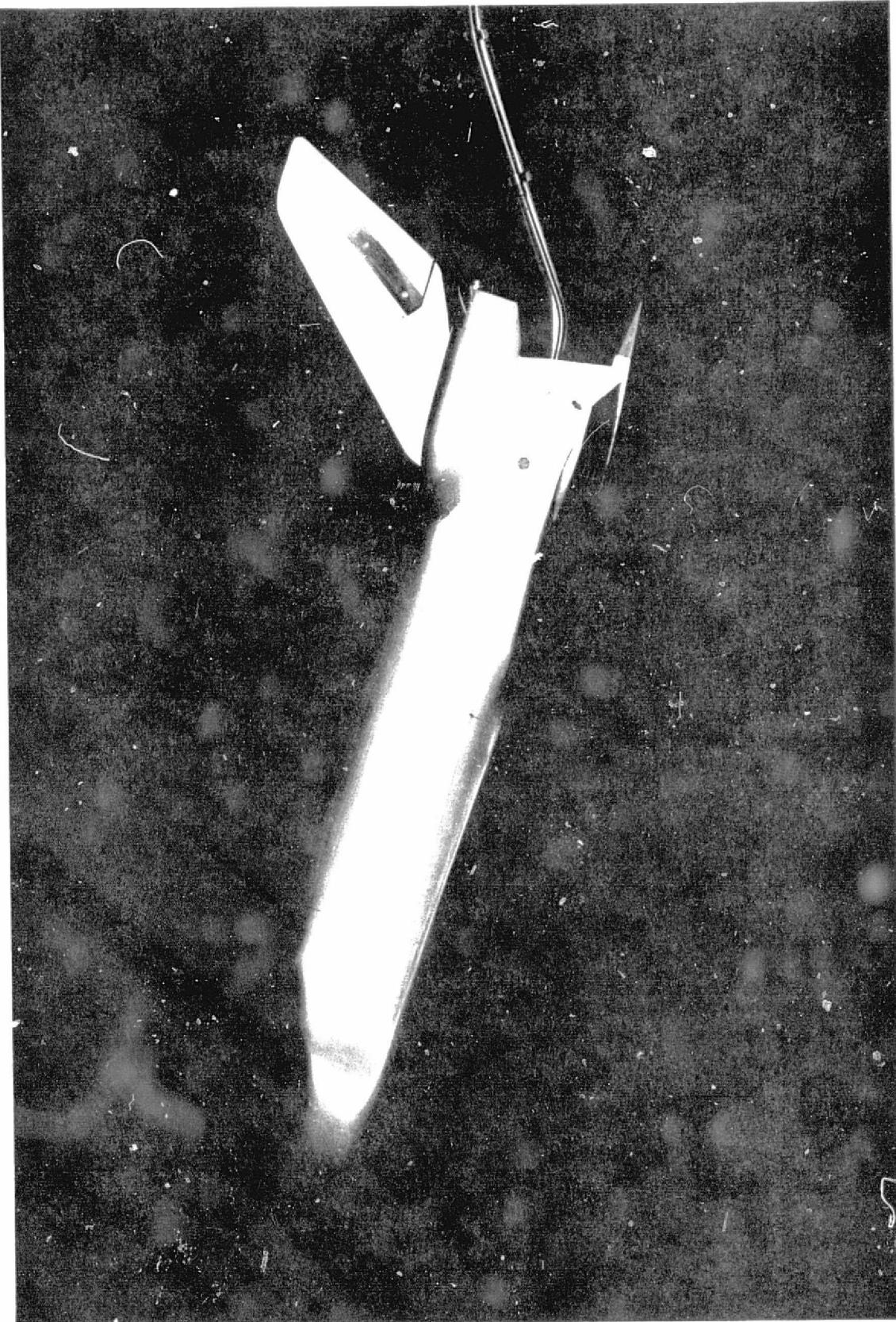


Figure 2. - 140A/B Orbiter for Test OA90.



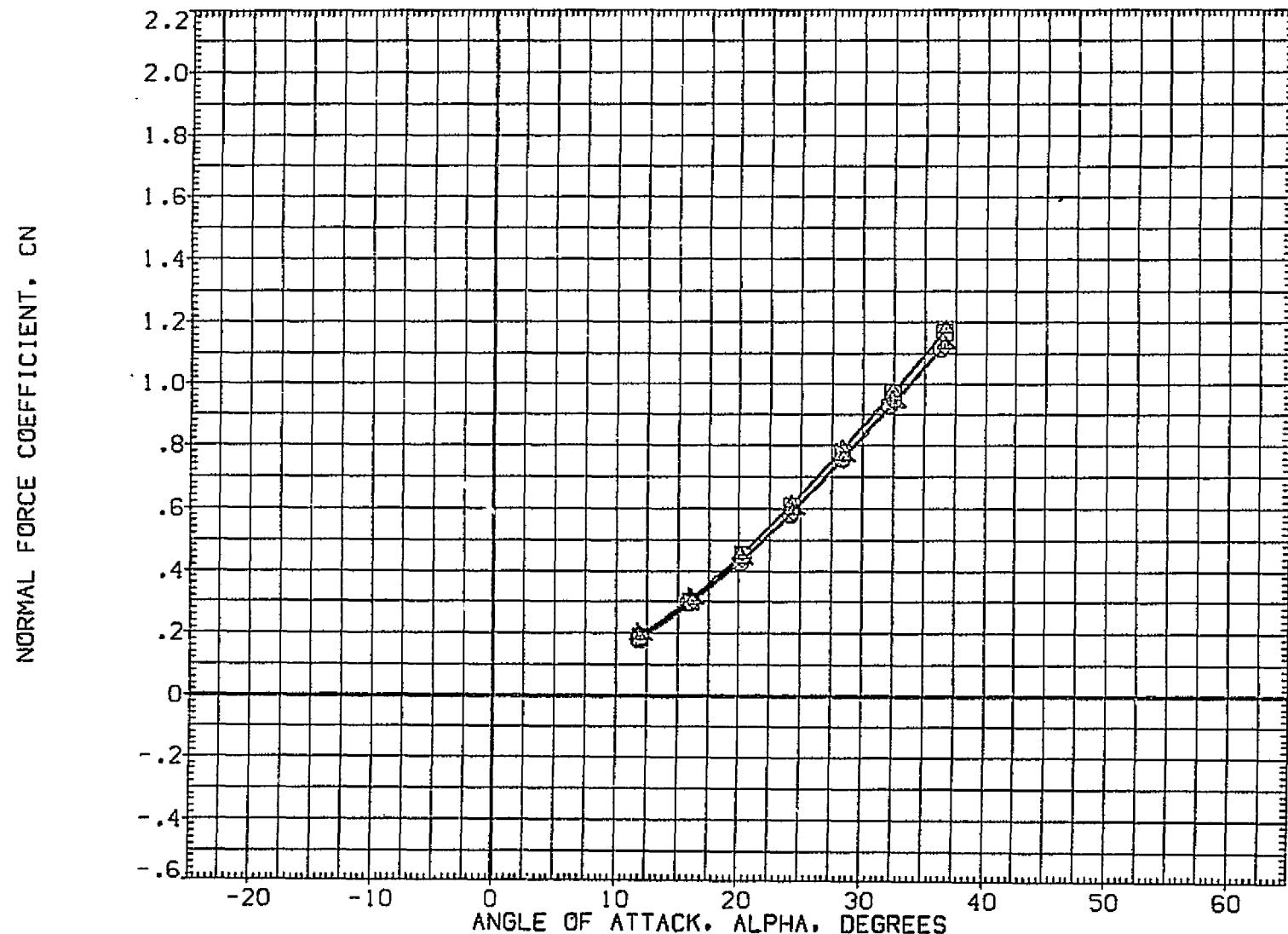
a. Top Three-quarter View  
Figure 3. - Model installation photographs.



b. Side View  
Figure 3. - Concluded.

**DATA FIGURES**

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



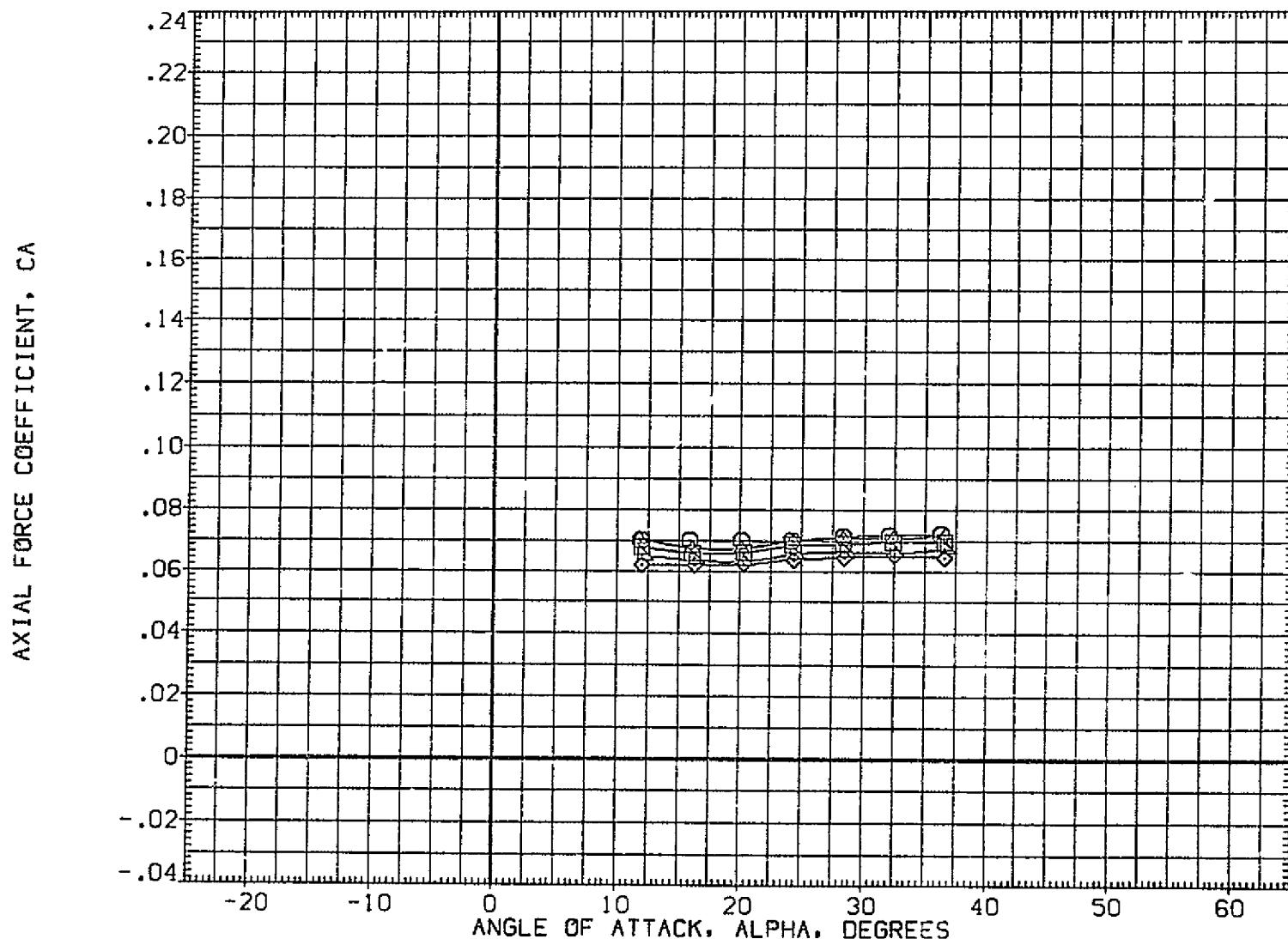
REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

PAGE

1

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	SDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
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(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. XG
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.233	.000	55.000	-5.000	YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100

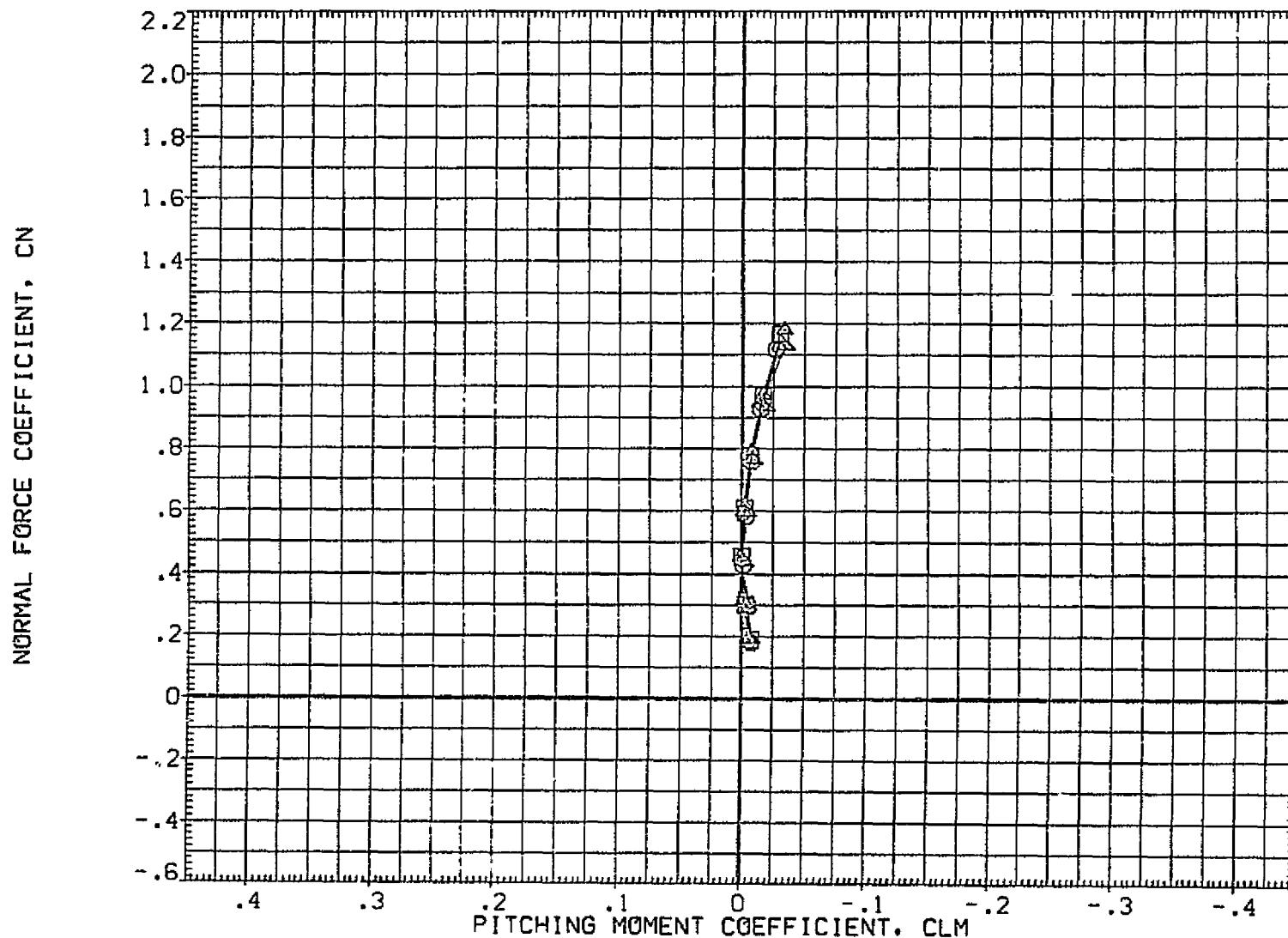


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

CADMACH = 10.31

PAGE 2

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ001)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF	474.8000 IN.
(CQJ003)	○ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF	936.7000 IN.
(CQJ002)	△ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP	1076.7000 IN. XG
(CQJ004)	▽ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100

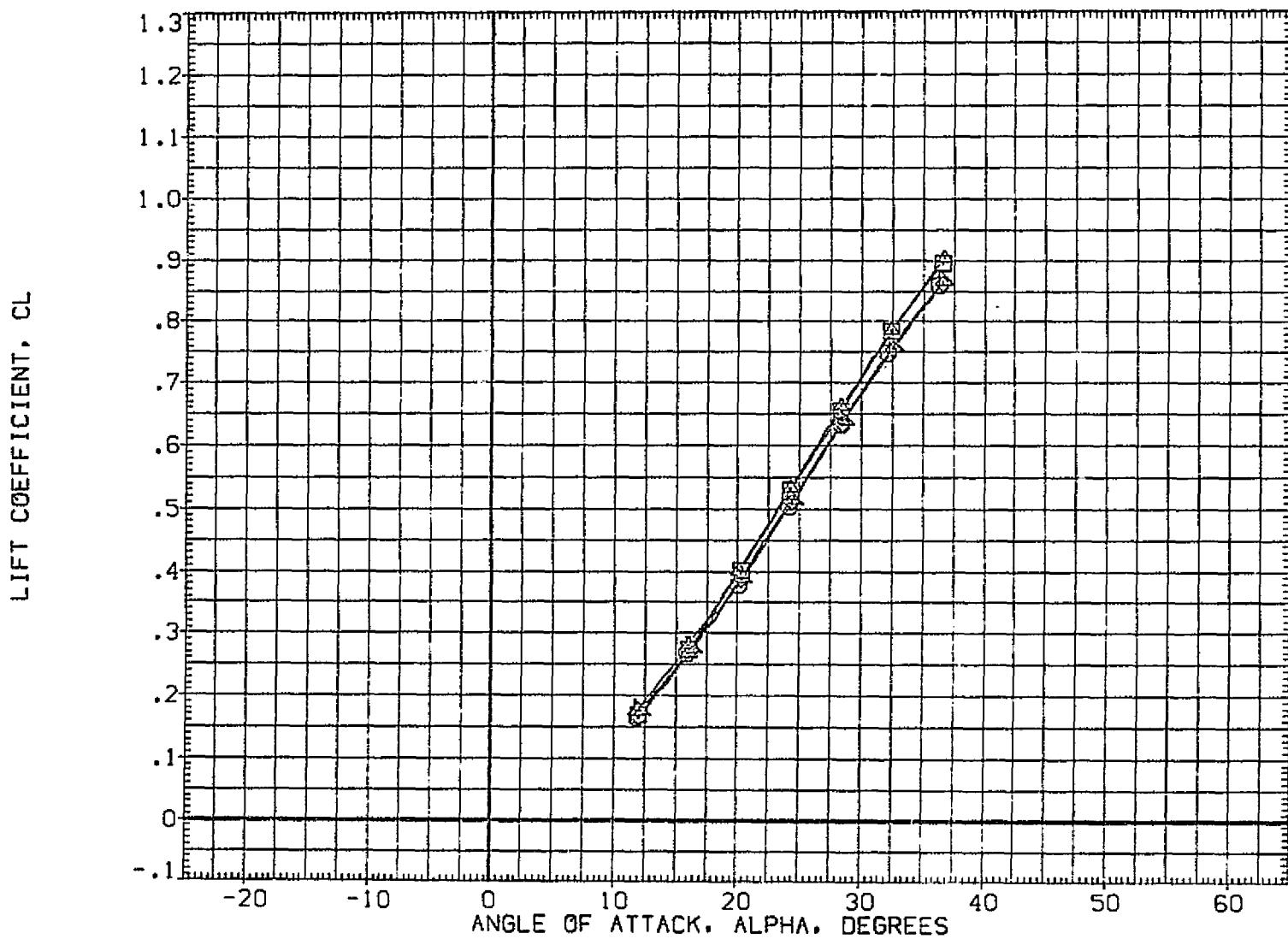


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF	474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF	936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP	1076.7000 IN. XD
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100

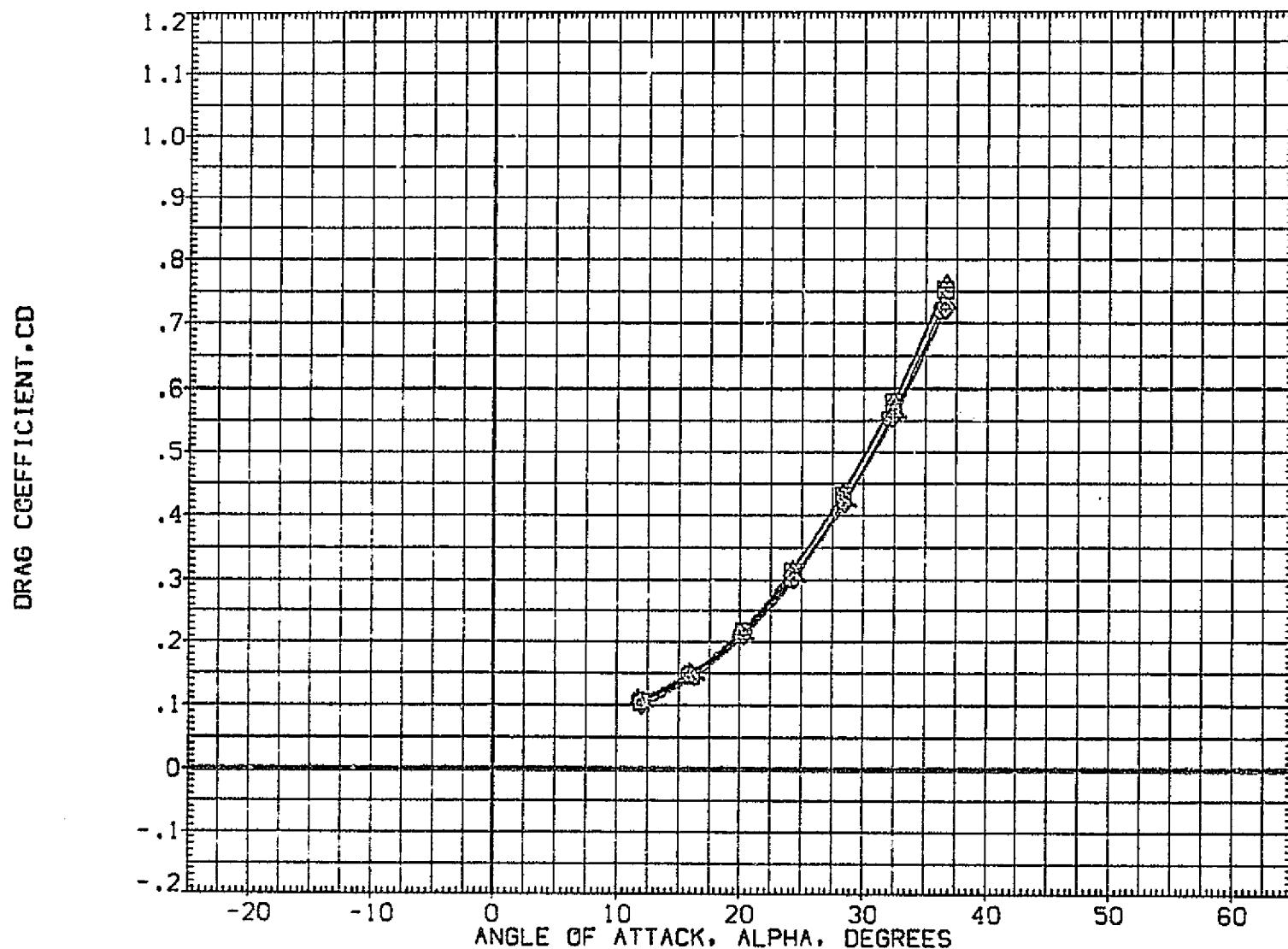


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

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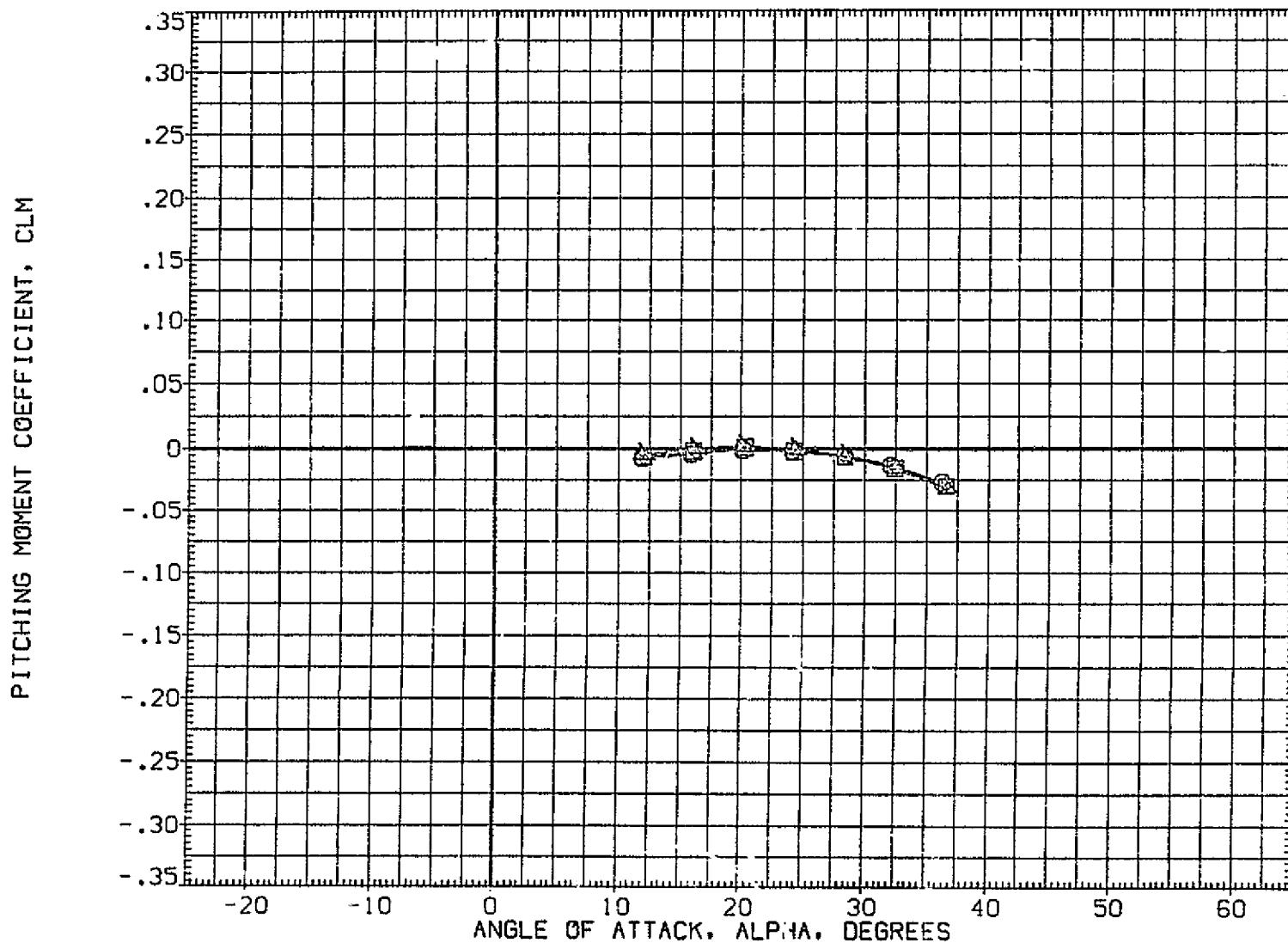
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(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-3 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1376.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.802	.000	.55.000	.000	SREF	2690.0000 SQ.FT.
(DQJ001)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF	474.8000 IN.
(CQJ003)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.2	.000	.55.000	.000	BREF	936.7000 IN.
(DQJ002)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1	.000	.55.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ004)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1	.000	.55.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

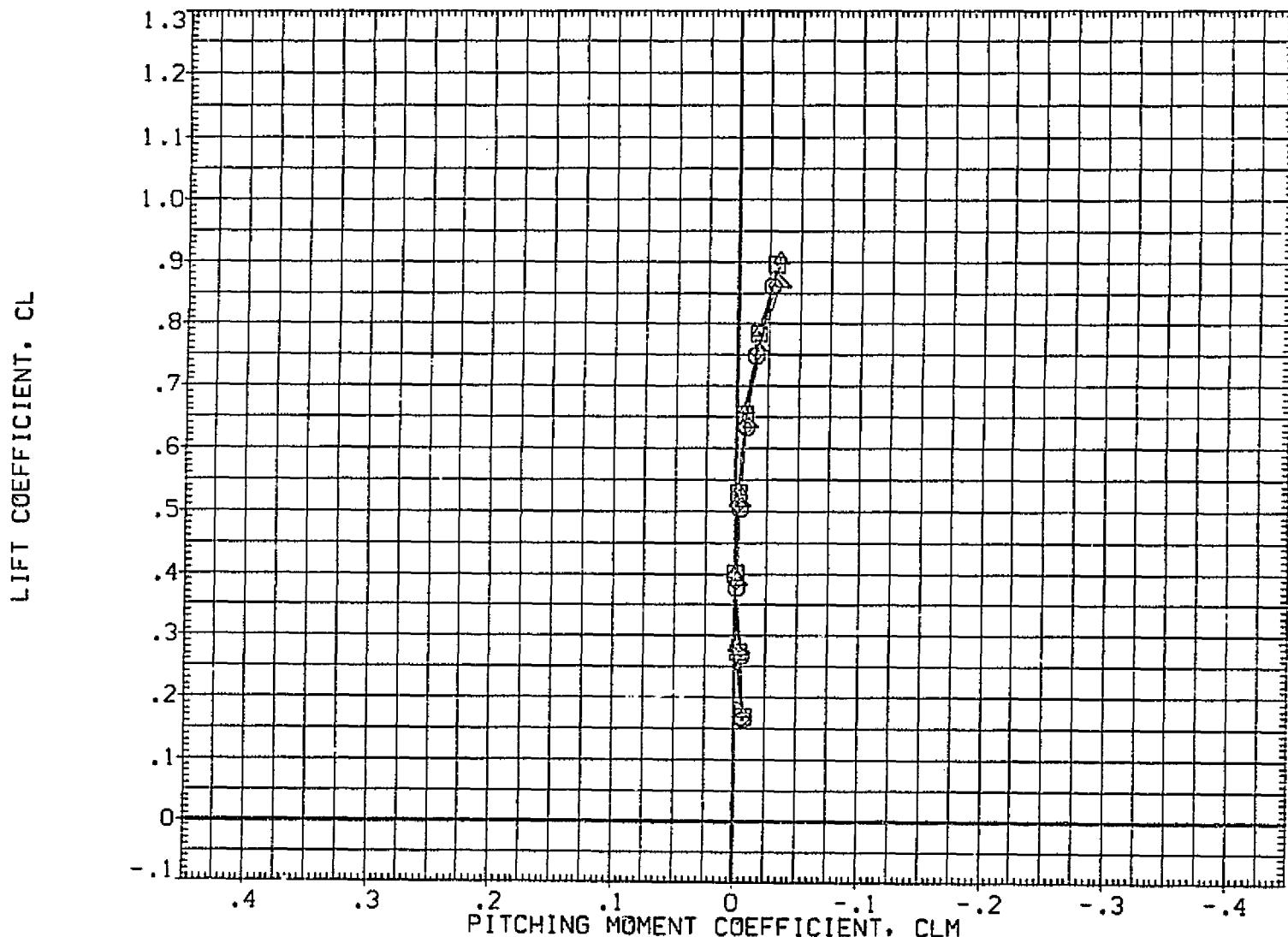


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

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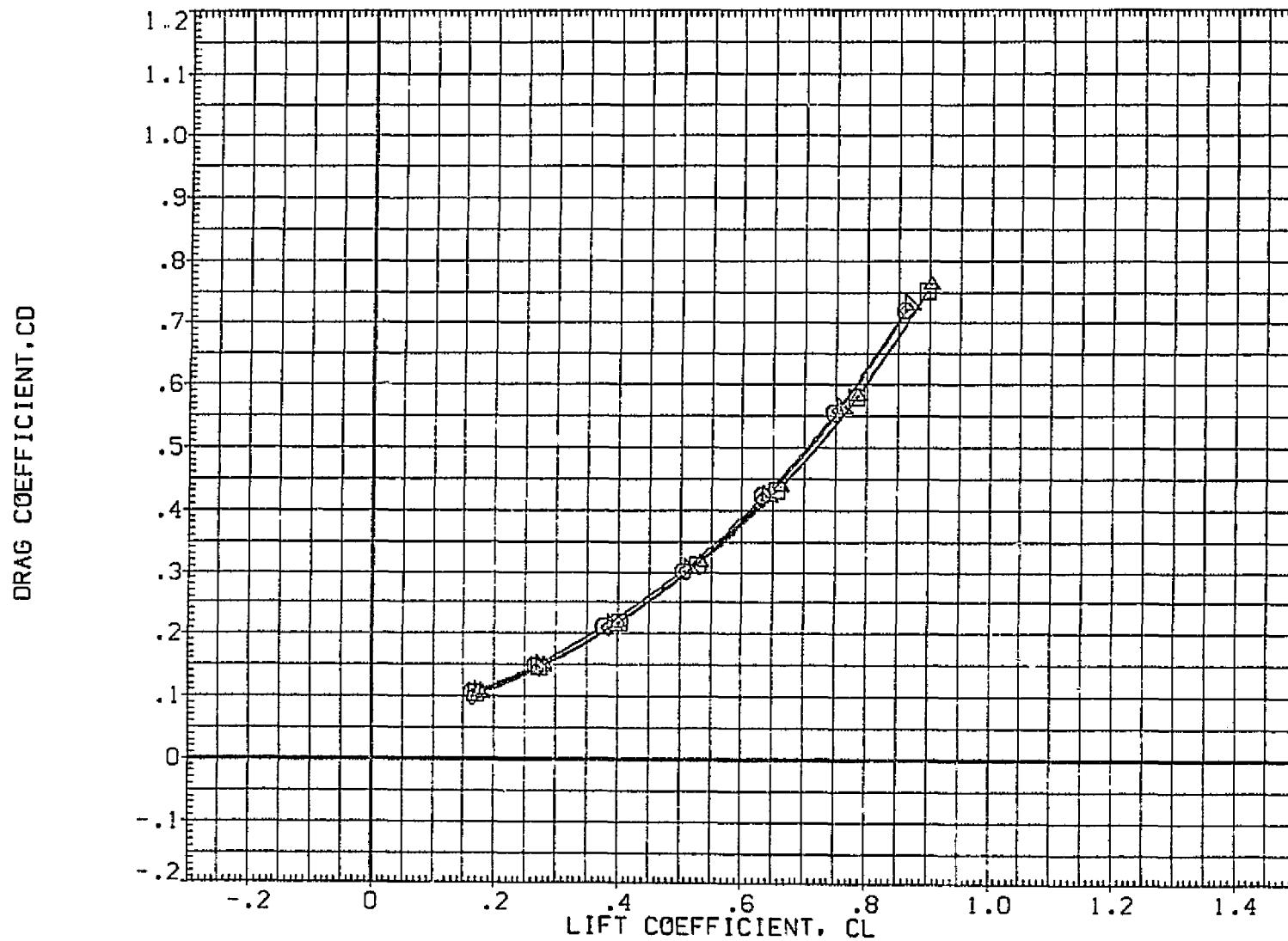
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(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	.55.000	.000	SREF 2690.0000 SQ.FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF 474.6000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	.55.000	.000	BREF 936.7000 IN.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	.55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



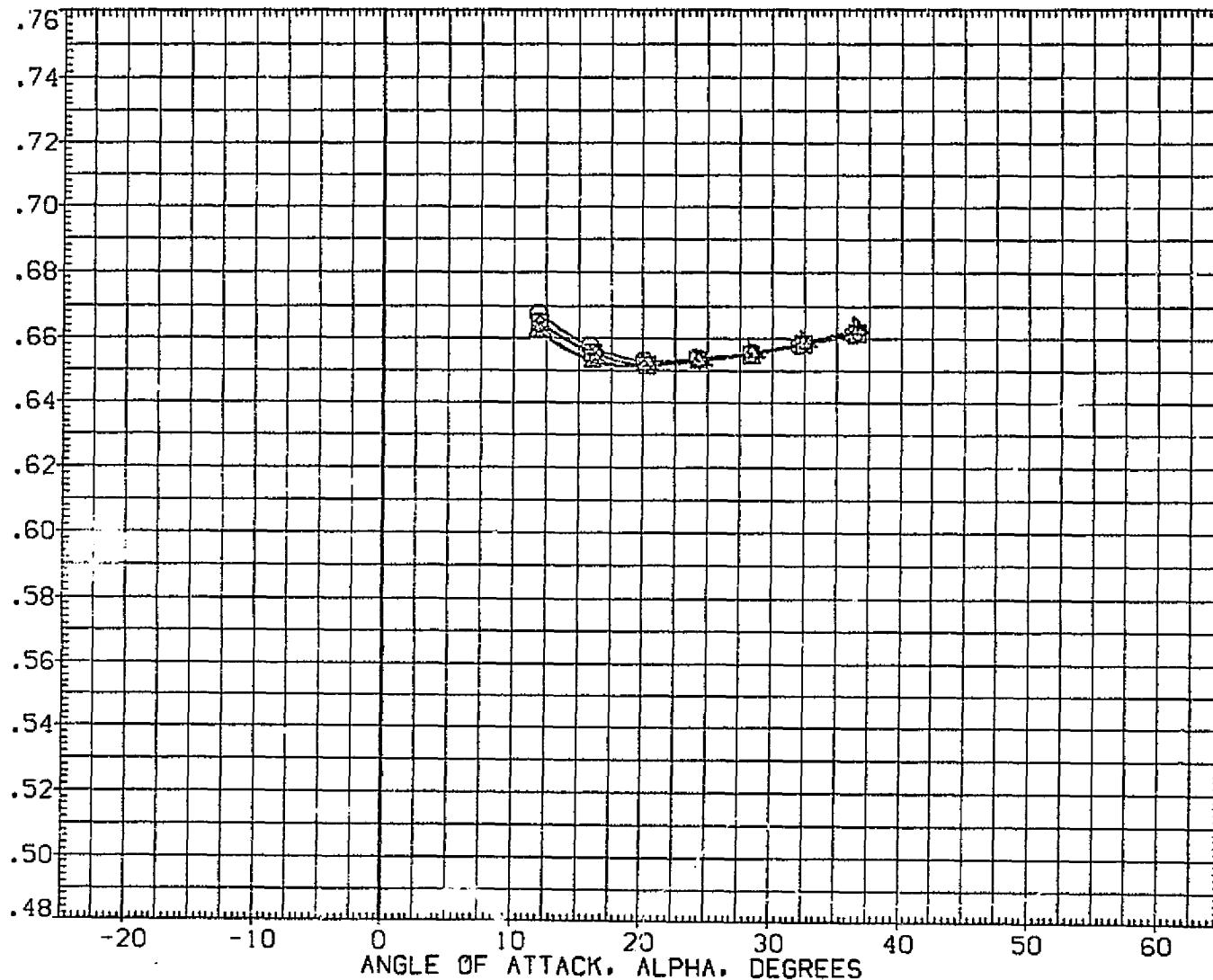
REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

CADMACH = 10.31

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(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	BREF 936.7000 IN.
(CQJ032)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	XMRP 1076.7000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	.000	YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0100 IN.X

CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L

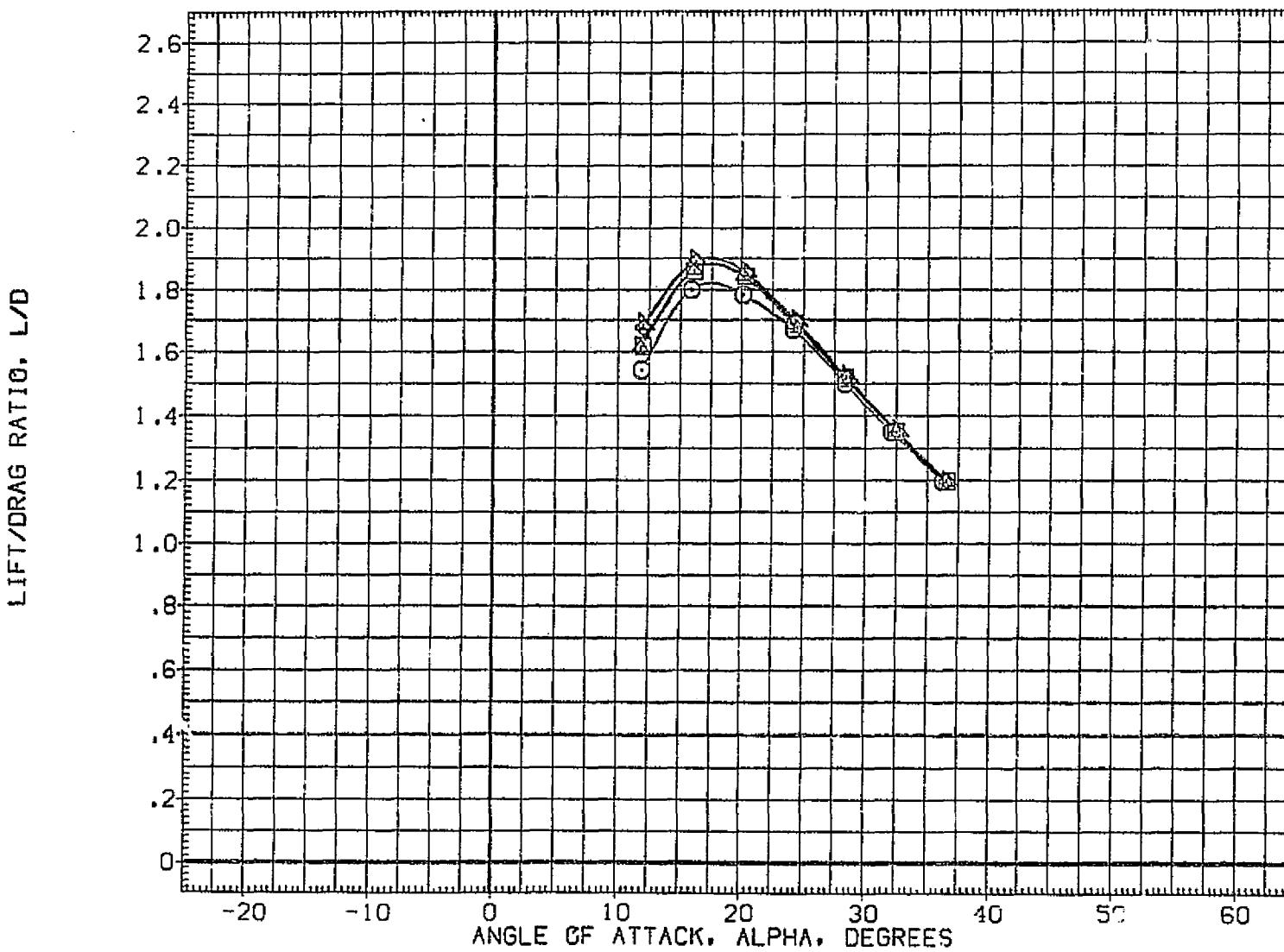


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

CADMACH = 10.31

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(DQJ001)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8001 IN.
(CQJ003)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.245	.000	55.000	.000	BREF 938.7000 IN.
(CQJ002)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	XMRP 1076.7001 IN. X0
(CQJ004)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.233	.000	55.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

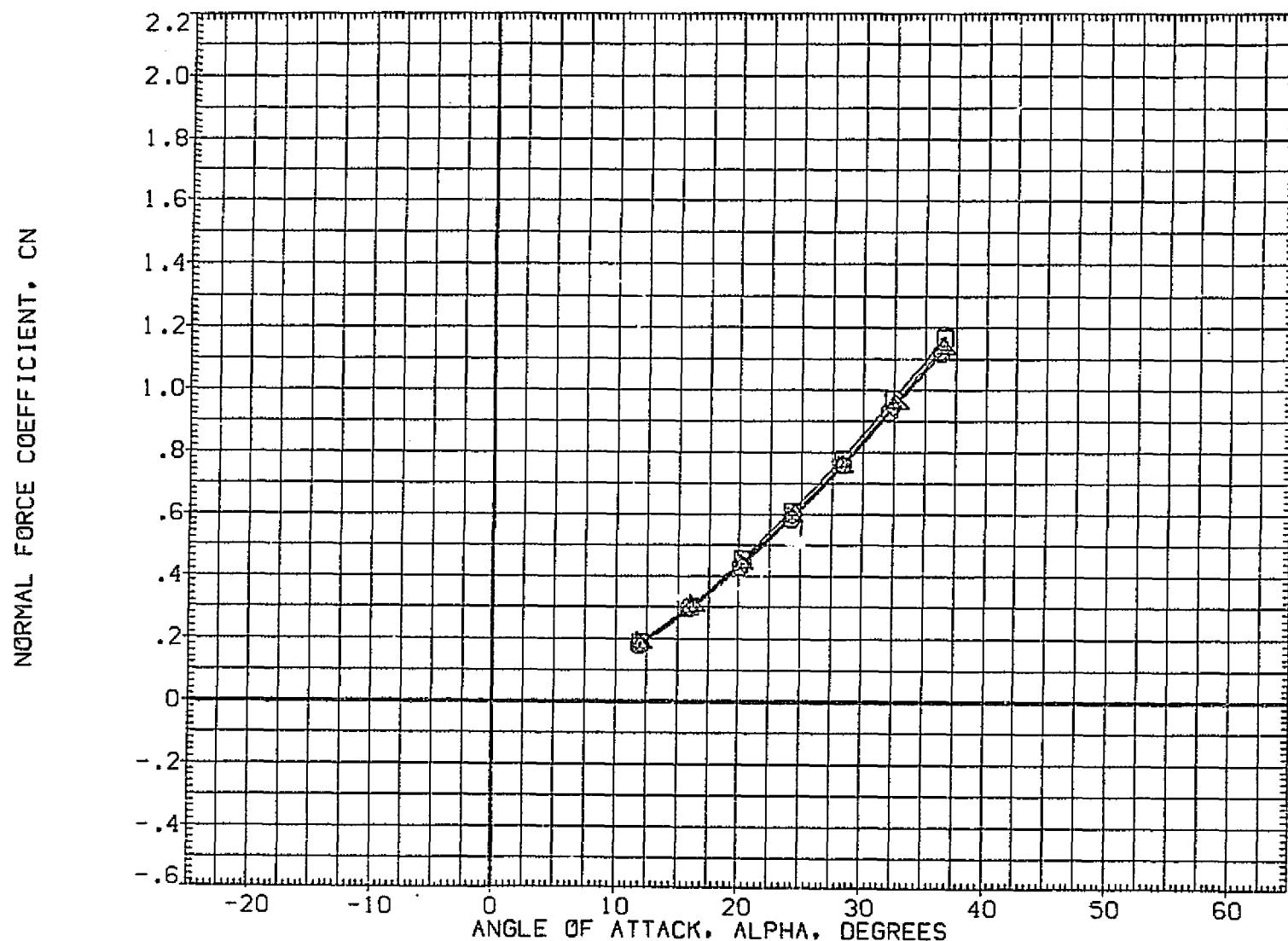


REYNOLDS NUMBER EFFECT AT ZERO DEGREE ELEVON DEFLECTION

[A]MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
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(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF	474.8000	IN.
(CQJRD1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	.55.000	.000	BREF	936.7000	IN.
(DQJRD1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55.000	.000	XMRP	1076.7000	IN. XG
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55.000	.000	YMRP	.0000	IN. YG
						ZMRP	375.0000	IN. ZG
						SCALE	.0100	

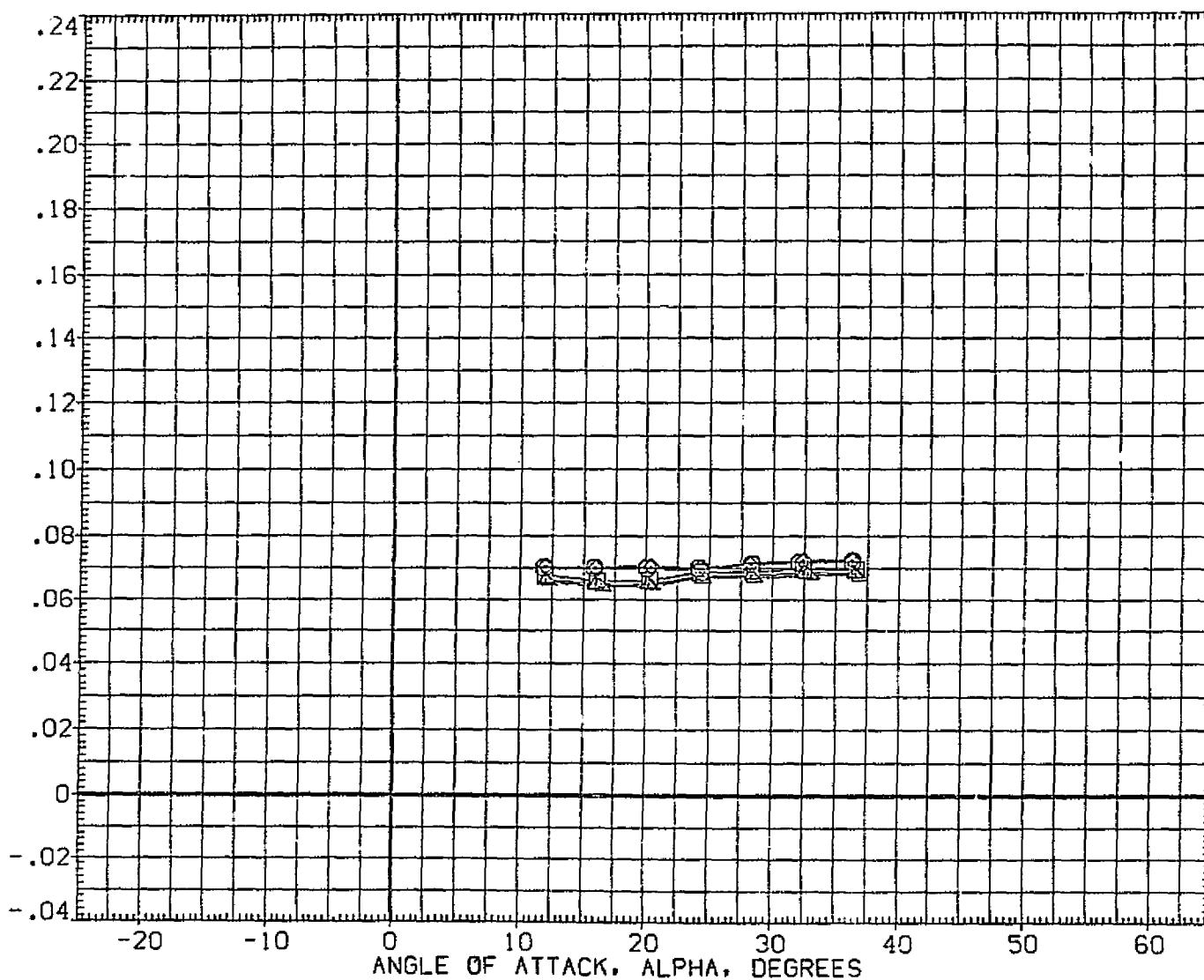


### REPEATABILITY STUDY

(A)MACH = 10.31

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(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJRD1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(DQJRD1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. XD
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. YO
						ZMRF 375.0000 IN. ZO
						SCALE .0100

AXIAL FORCE COEFFICIENT, CA

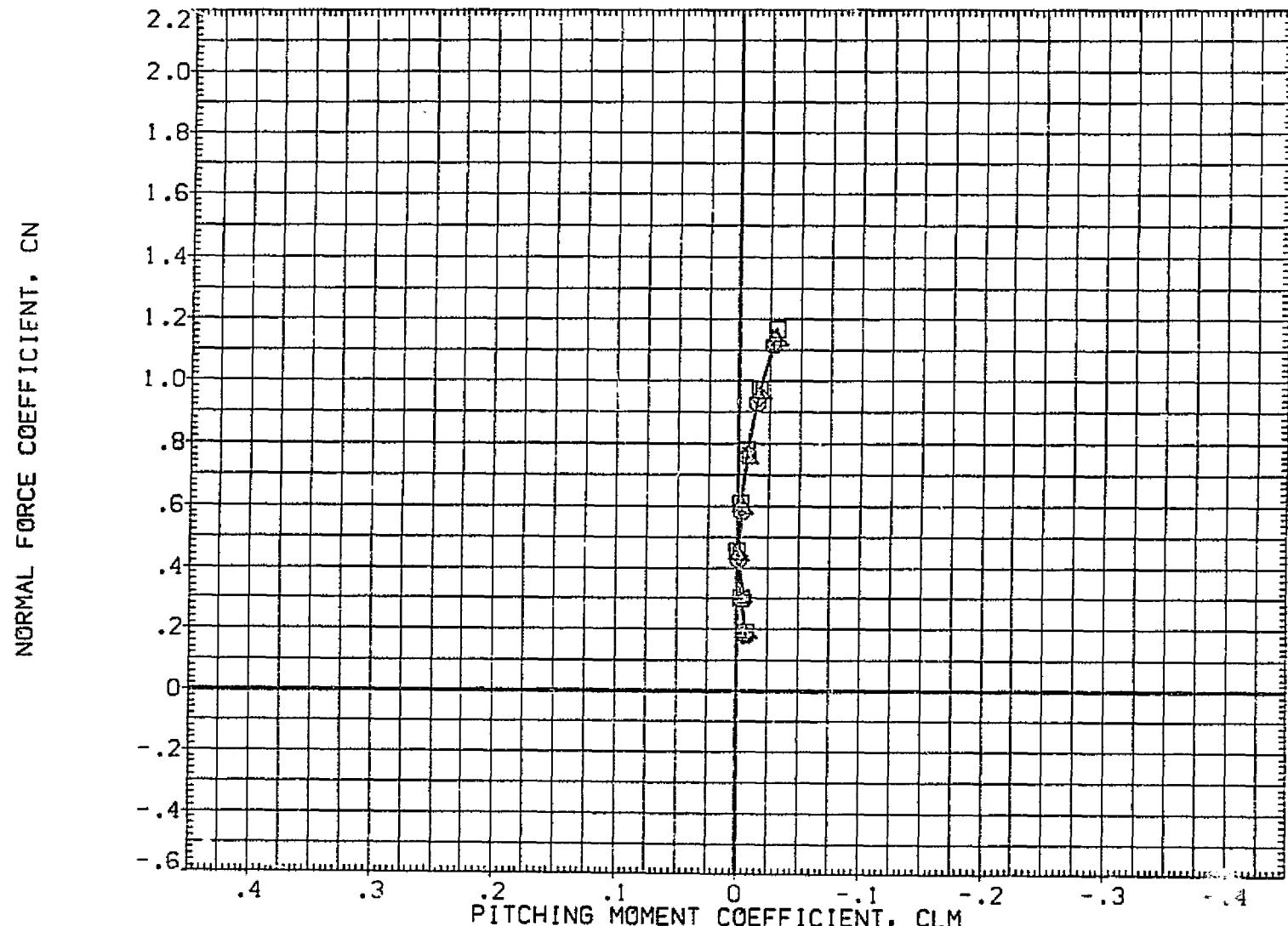


### REPEATABILITY STUDY

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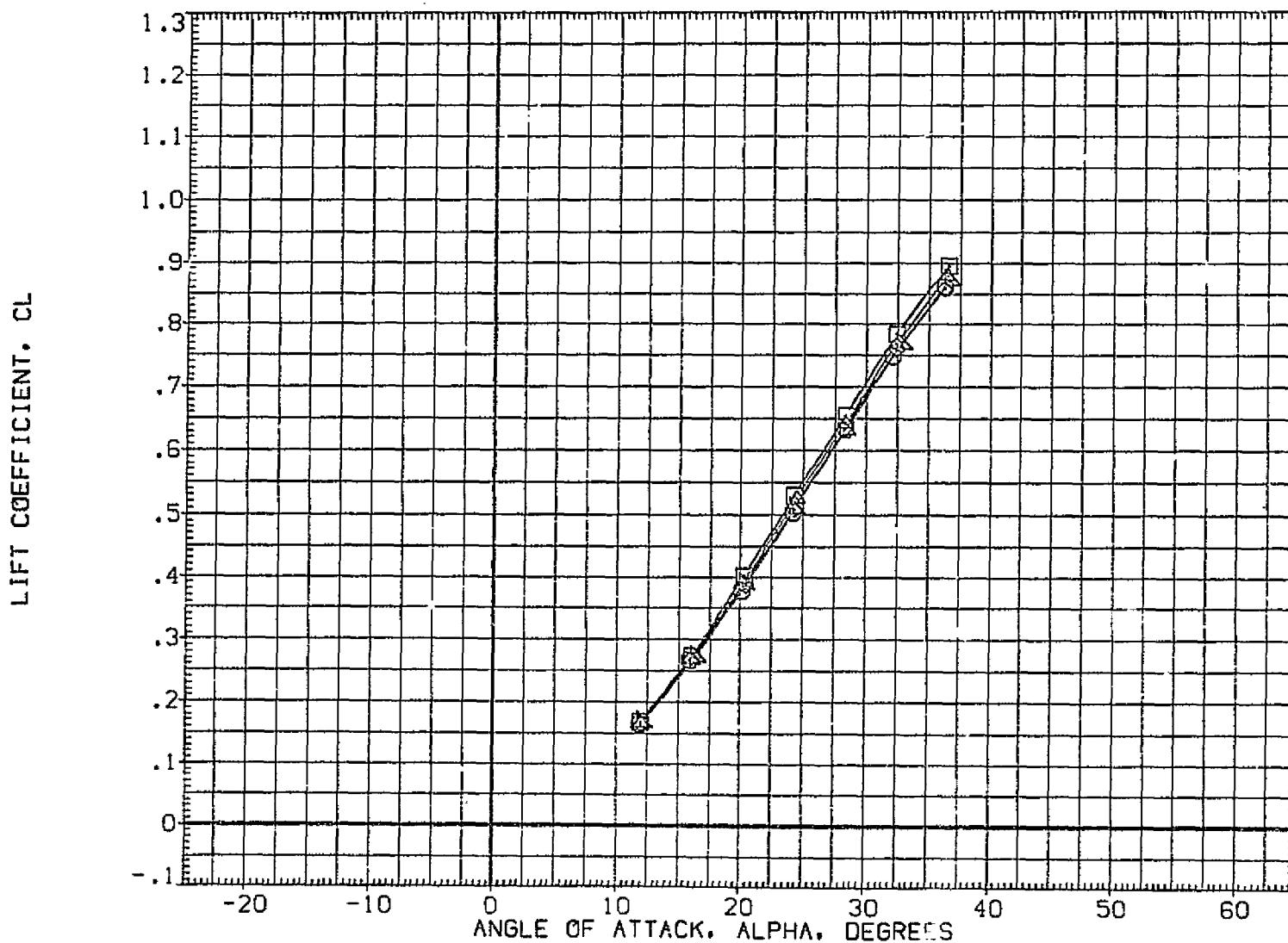
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
{ CQJ001 }	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	.55.000	.000	SREF 2690.0000 SQ.FT.
{ DQJ001 }	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF 474.8000 IN.
{ CQJR01 }	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	.55.000	.000	BREF 936.7000 IN.
{ DQJR01 }	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55.000	.000	XMRP 1076.7000 IN. XG
{ CQJRR1 }	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55.000	.000	YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100



### REPEATABILITY STUDY

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(DQJ001)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF	474.8000 IN.
(CQJRD1)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF	936.7000 IN.
(DQJRD1)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP	1076.7000 IN. XD
(CQJRR1)	▷ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP	.0000 IN. YD
						ZMRP	375.0000 IN. ZD
						SCALE	.0100

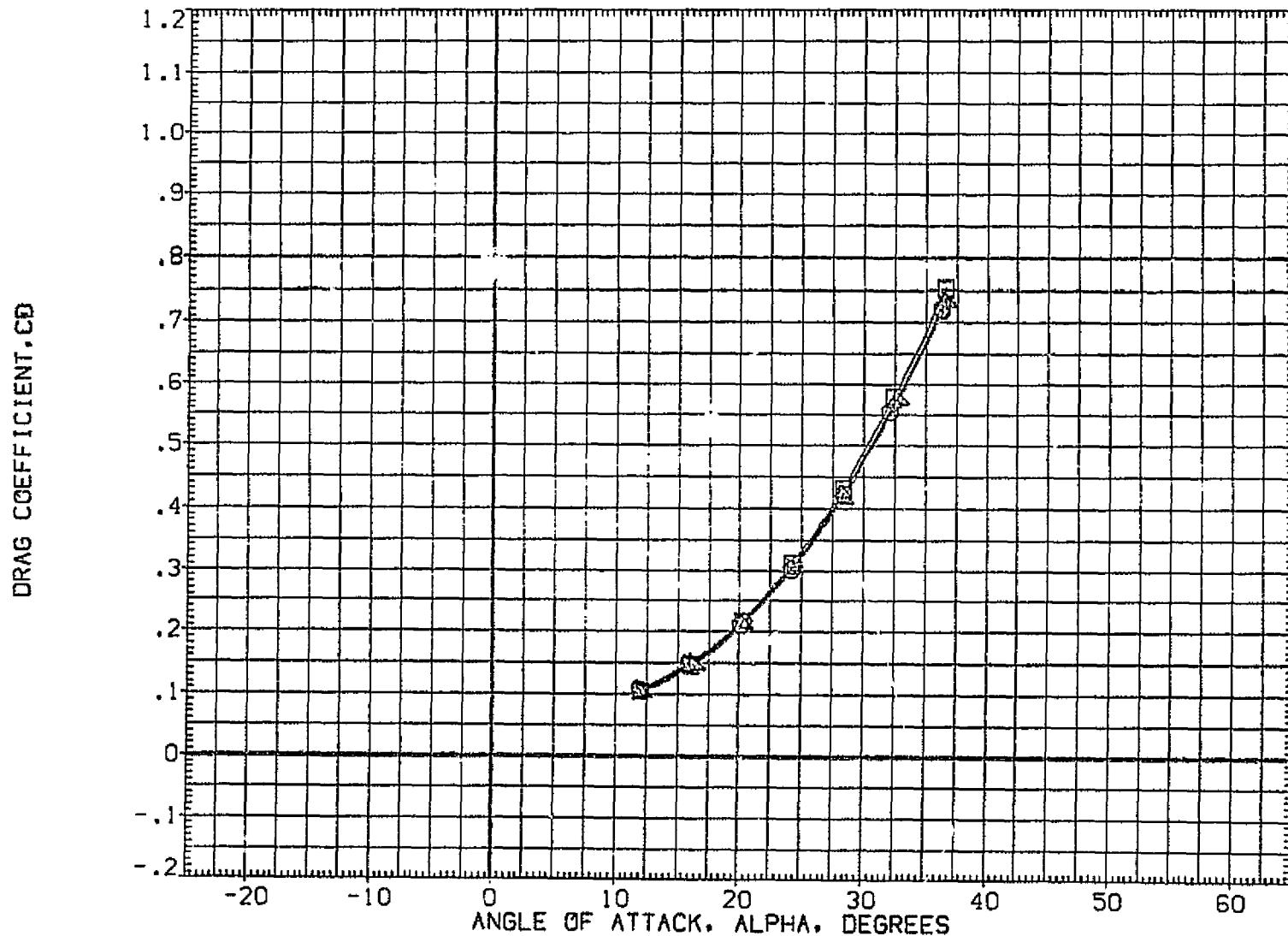


### REPEATABILITY STUDY

(A)MACH = 10.31

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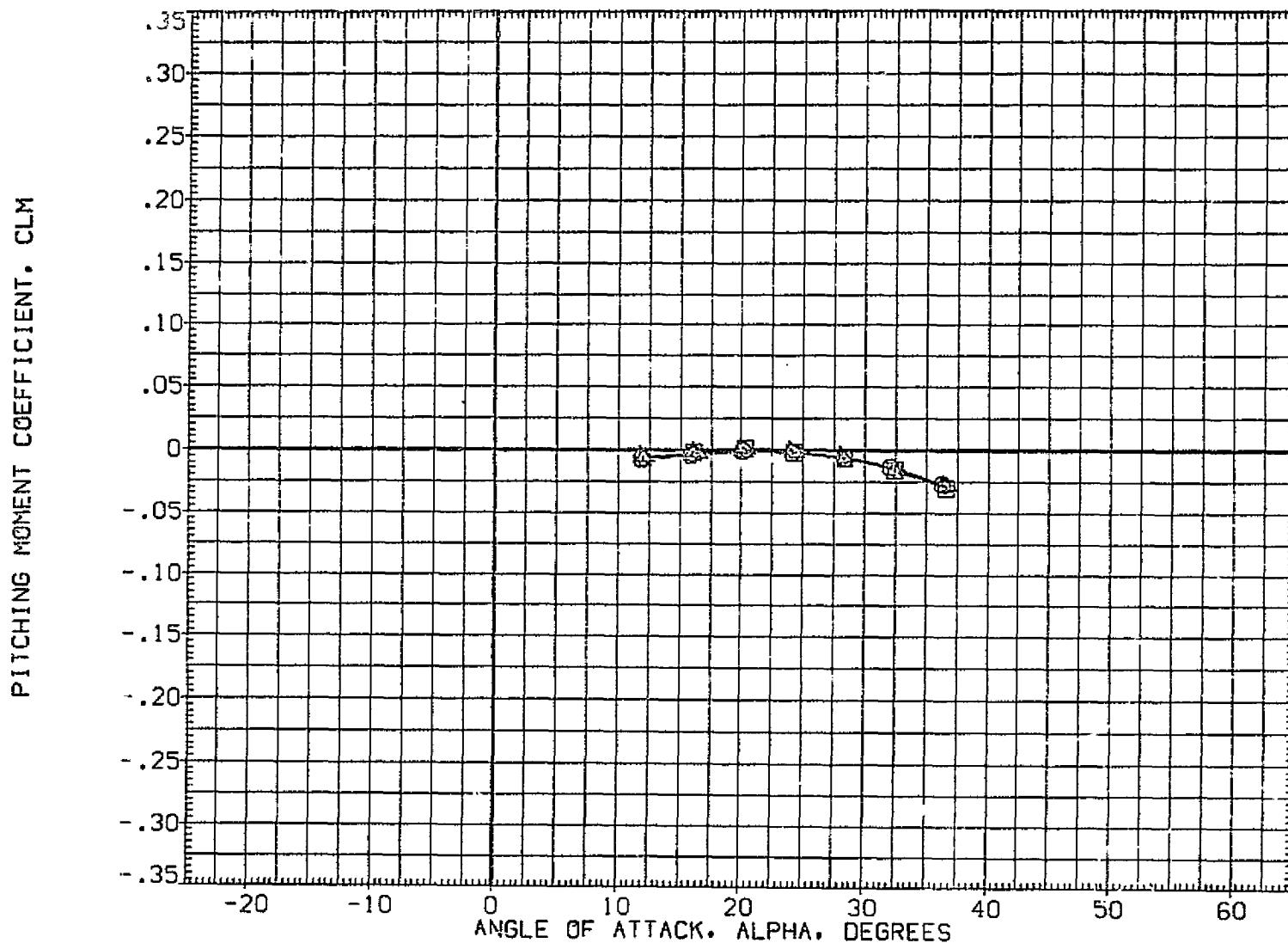
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	.55.000	.000	SREF 2690.0000 SQ.FT.
(DOJ01)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF 474.8000 IN.
(CQJ01)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	.55.000	.000	BREF 936.7000 IN.
(DQJ01)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55.000	.000	XMRP 1076.7000 IN. X0
(CQJRR1)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55.000	.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



### REPEATABILITY STUDY

CADMACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
{CQJ001}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF	2690.0000 SQ.FT.
{DQJ001}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	CREF	474.8000 IN.
{CQJRD1}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF	936.7000 IN.
{DQJRD1}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP	1076.7000 IN. XG
{CQJRR1}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP	.0000 IN. YD
						ZMRP	375.0000 IN. ZB
						SCALE	.0100

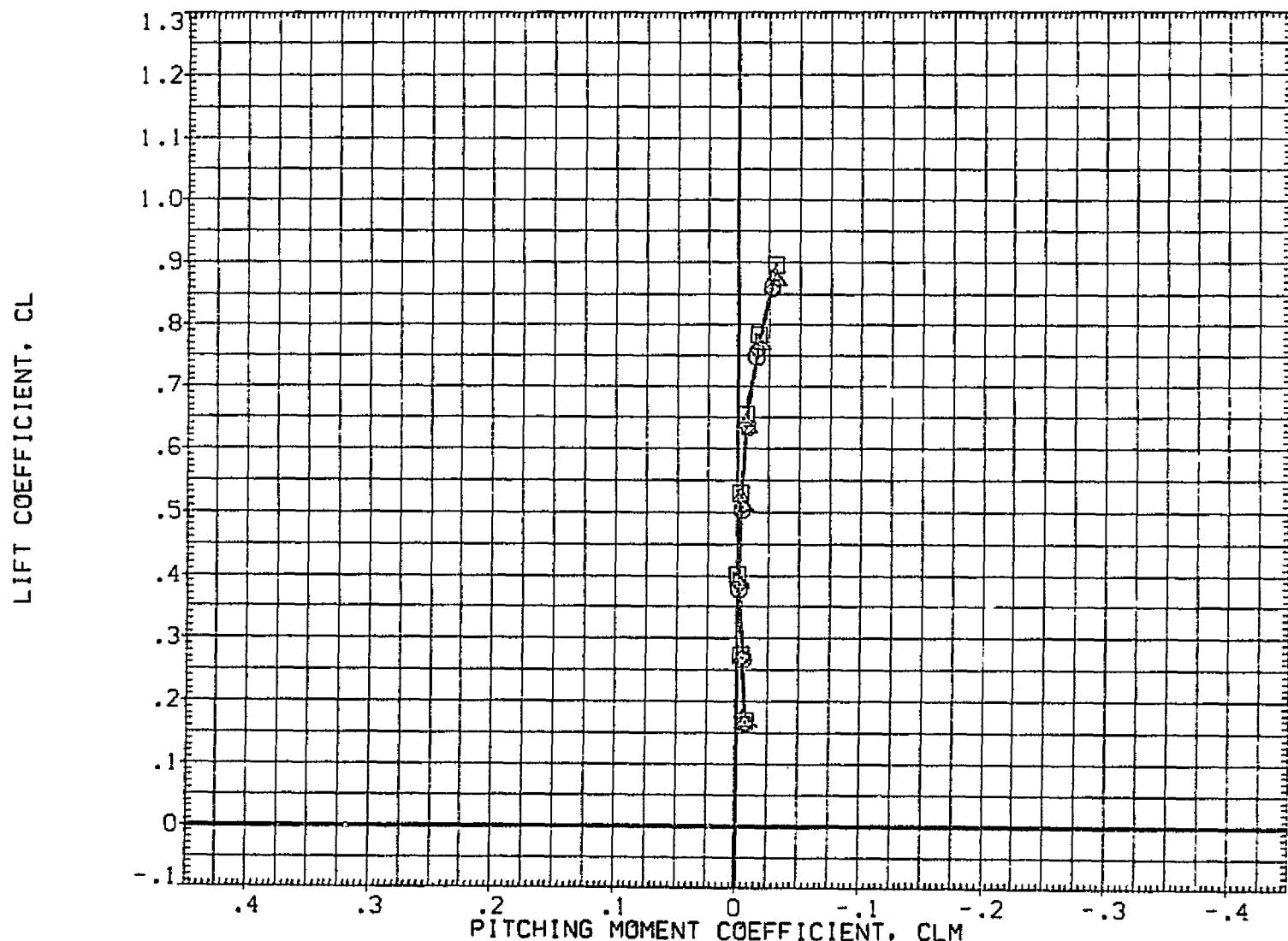


### REPEATABILITY STUDY

(ADMACH = 10.31

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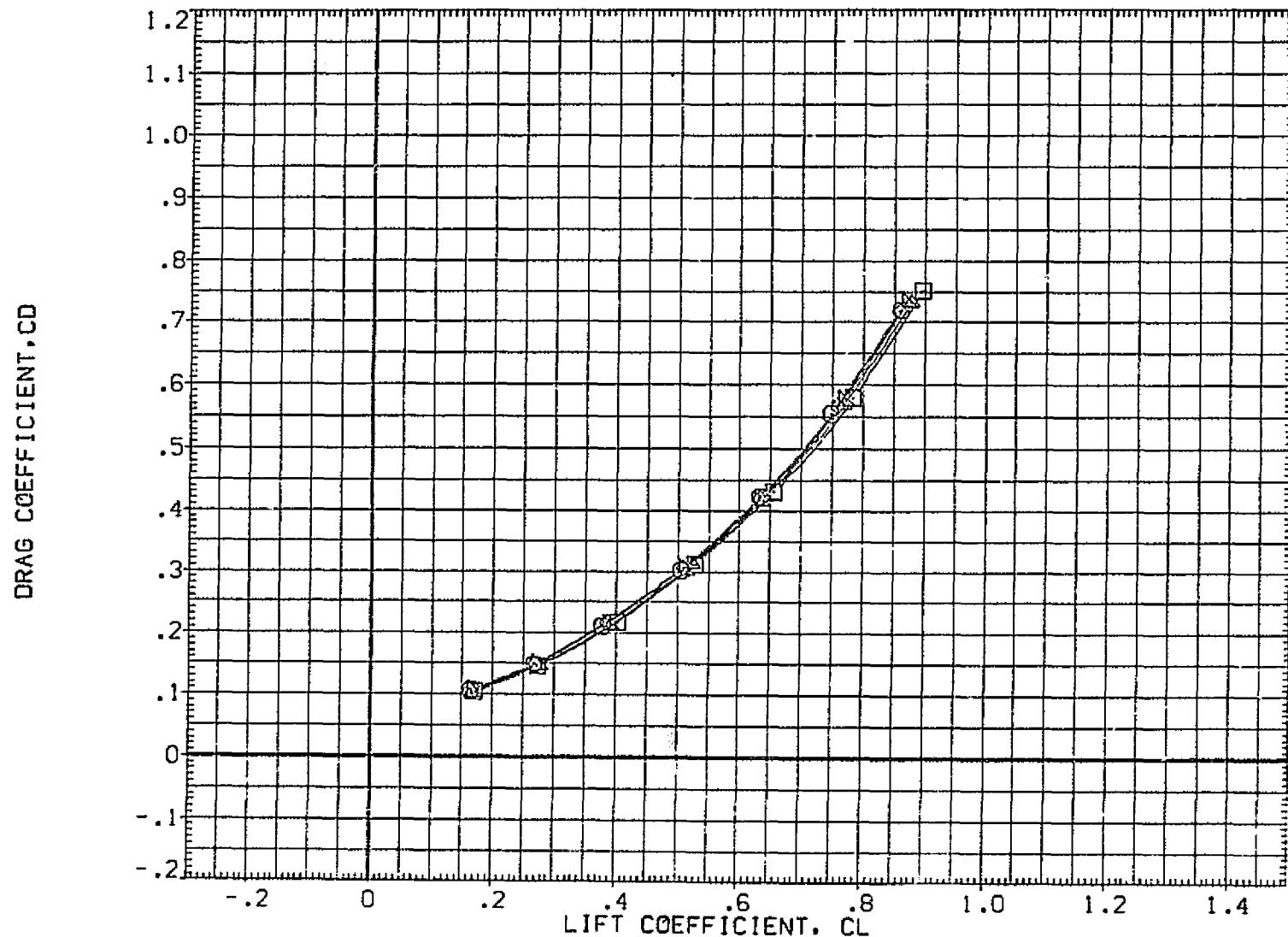
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	LREF 474.8000 IN.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	55.000	.000	BREF 936.7000 IN.
(DQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	55.000	.000	XMRP 1076.7000 IN. XD
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	55.000	.000	YMRP .0000 IN. YO
						ZMRP 375.0000 IN. ZO
						SCALE .0100



### REPEATABILITY STUDY

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.00	.55.000	.000	SREF 2690.0000 SO. FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF 474.8000 IN.
(CQJR01)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	.55.000	.000	BREF 936.7000 IN.
(DQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55.000	.000	XMRP 1076.7000 IN. XG
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55.000	.000	YMRP .0000 IN. YO
						ZMRP 375.0000 IN. ZG
						SCALE .0100



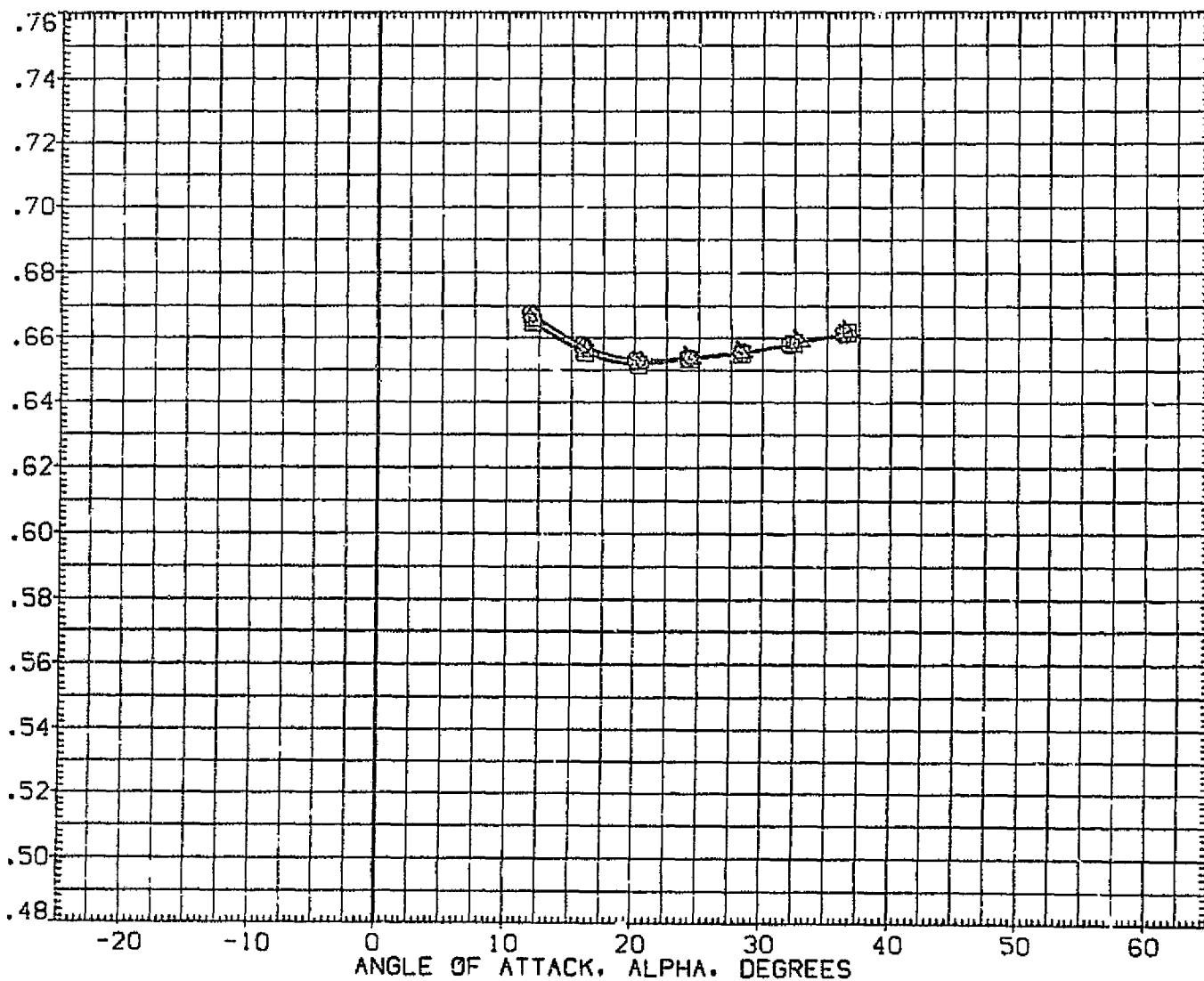
### REPEATABILITY STUDY

(A)MACH = 10.31

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CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L

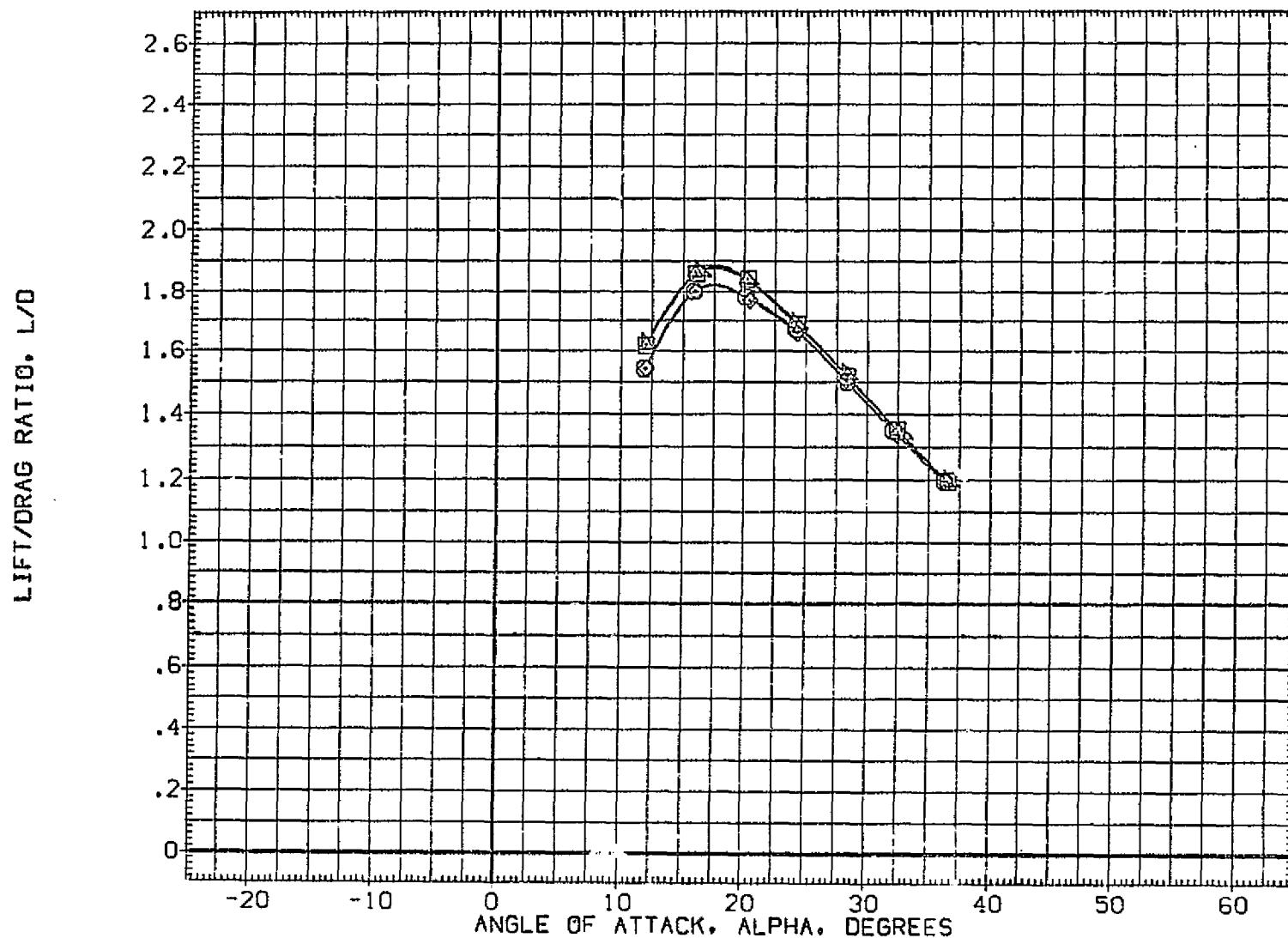
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.602	.000	.55,000	.000	SREF 2690.0000 SG.FT.
(CQJ011)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55,000	.000	LREF 474.8000 IN.
(CQJR01)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.599	.000	.55,000	.000	SREF 936.7000 IN.
(CQJR01)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55,000	.000	XMRP 1076.7000 IN. XC
(CQJRR1)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55,000	.000	ZMRP .0000 IN. ZG
						SCALE .0100



REPEATABILITY STUDY

C<sub>A</sub>MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.802	.000	.55.000	.000	SREF	2690.0000	S. J. FT.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	LREF	474.8000	IN.
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.598	.000	.55.000	.000	BREF	936.7000	IN.
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.951	.000	.55.000	.000	XMRP	1076.7000	IN. XG
(CQJRR1)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.950	.000	.55.000	.000	ZMRP	.0000	IN. YG
						SCALE	375.0000	IN. ZG
							.0100	

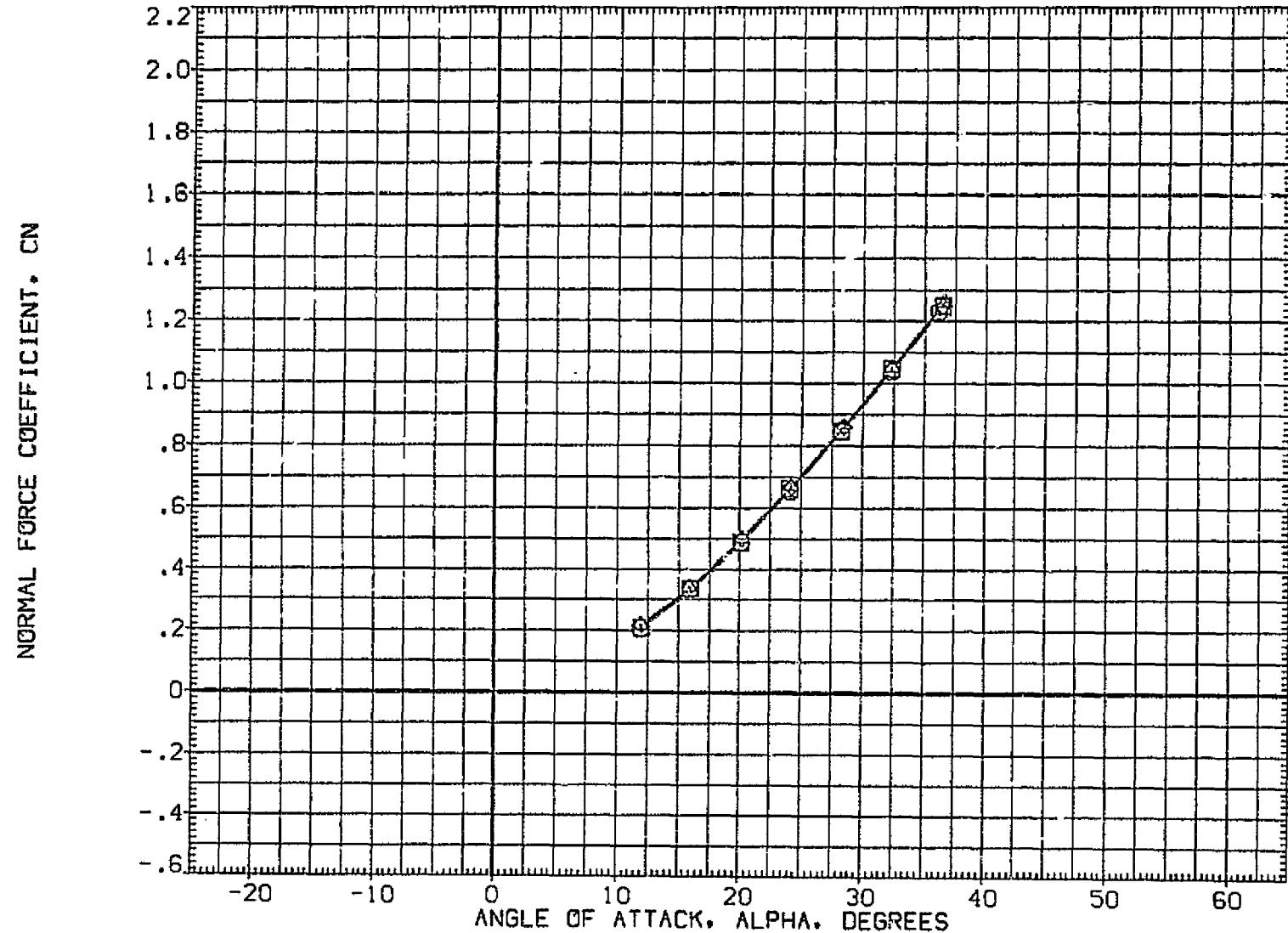


### REPEATABILITY STUDY

CADMACH = 10.31

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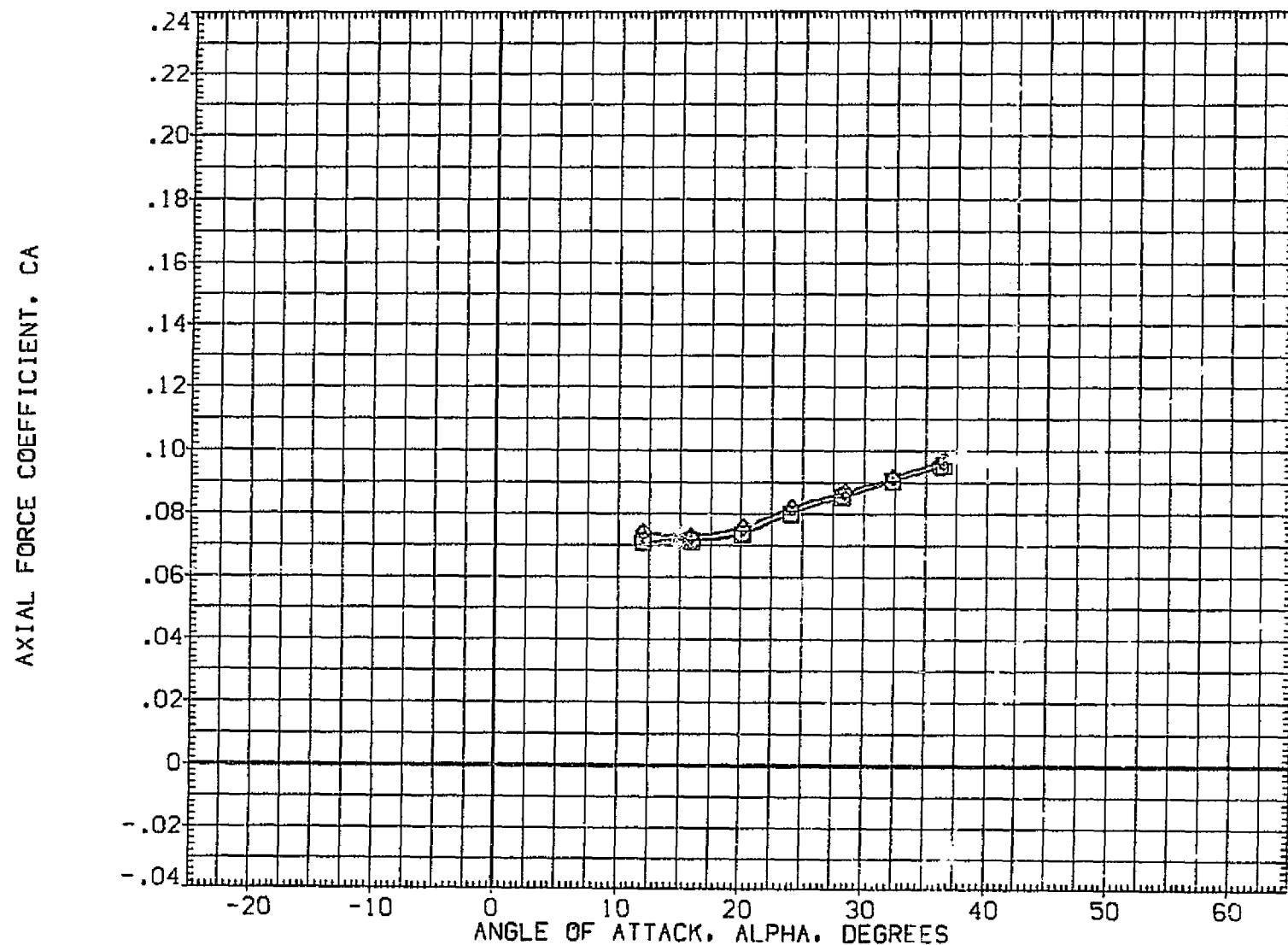
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT

CAFMACH = 10.33

DATA SET 5: 180L CONFIGURATION DESCRIPTION  
 (CQJ013) O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD RN/L 16.300 ELEVTR .000 SREF 2690.0000 SQ.FT.  
 (CQJ015) O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL .953 16.300 .000 LREF 474.8000 IN.  
 (CQJ014) X OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD .960 16.300 10.000 -5.000 BREF 936.7000 IN.  
 (CQJ016) X OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL .953 16.300 10.000 -5.000 XMRP 1076.7000 IN. XG  
 YMRP .0000 IN. YD  
 ZMRP 375.0000 IN. ZD  
 SCALE .0100

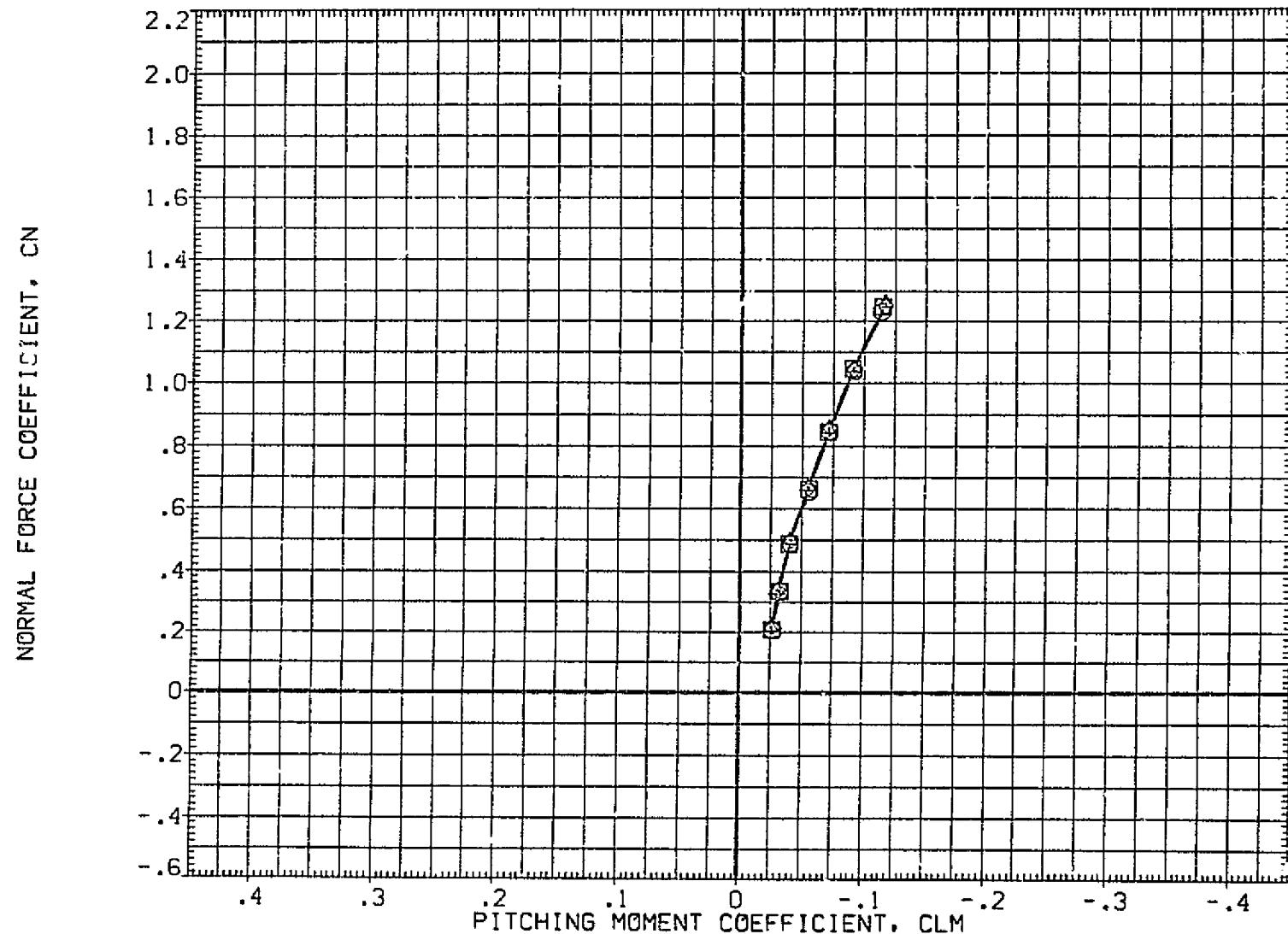


ELEVON GAP INTERPANEL GAP EFFECT

CADMACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SO.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

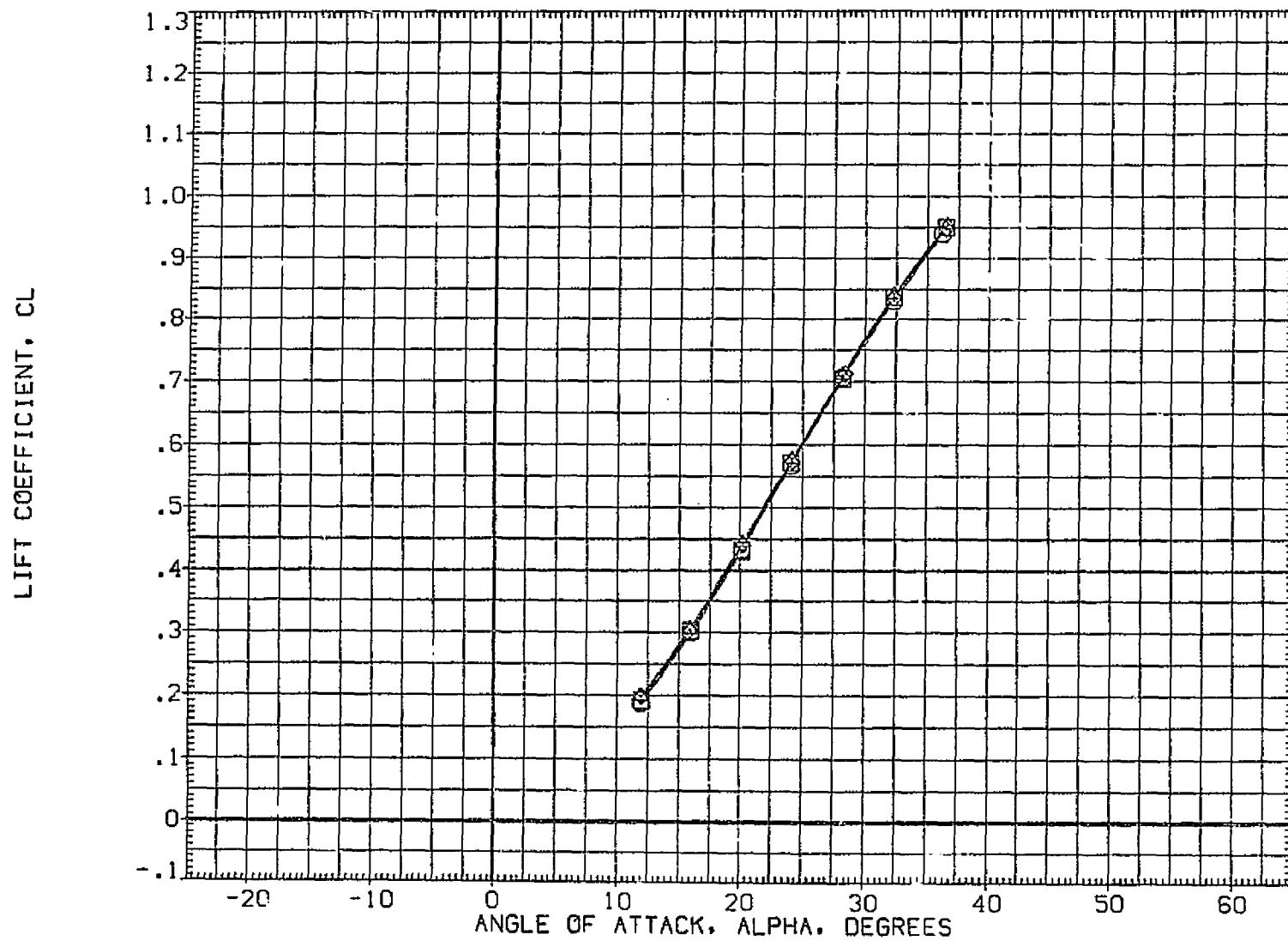


ELEVON GAP INTERPANEL GAP EFFECT

CADMACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

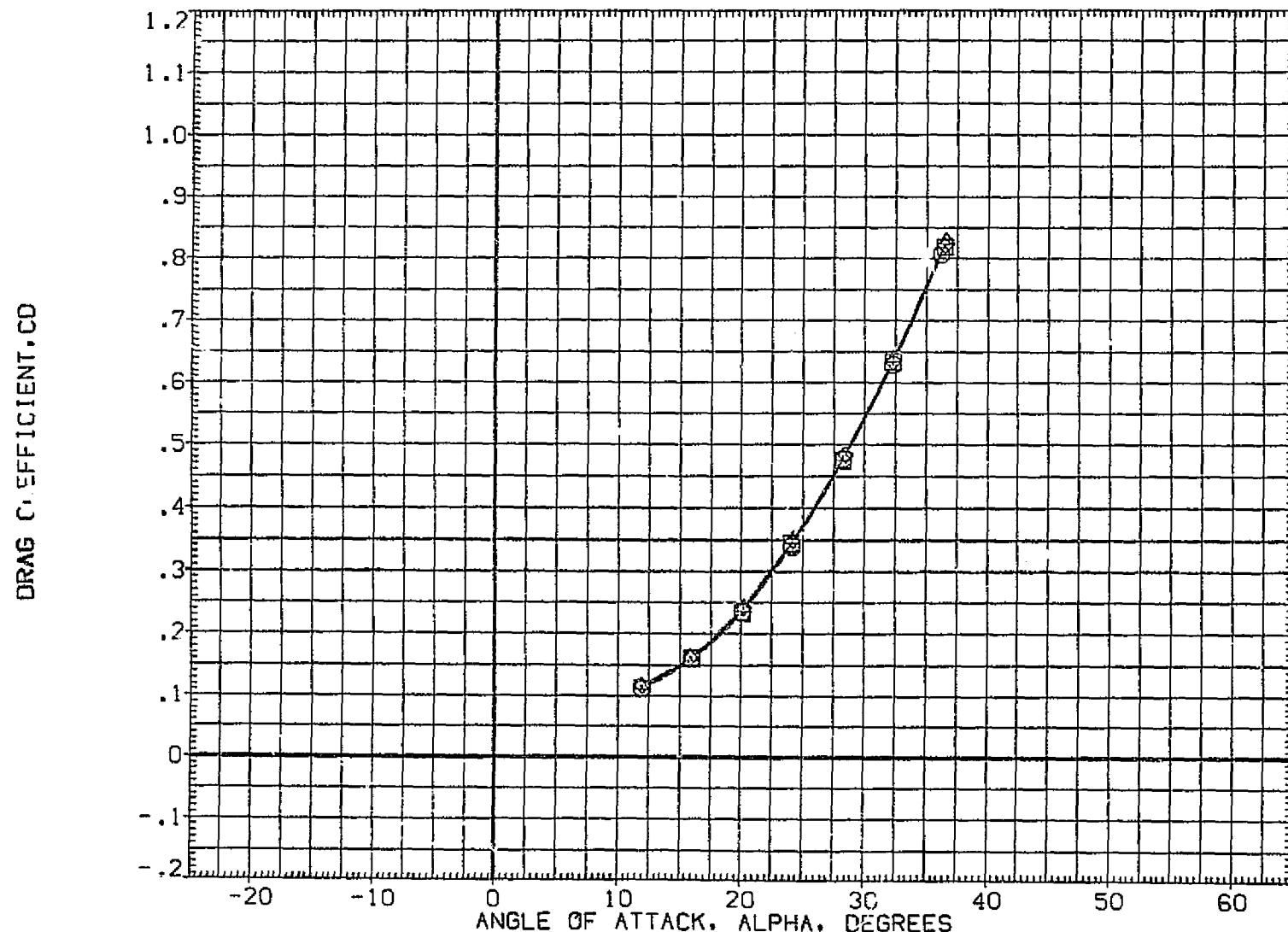


### ELEVON GAP INTERPANEL GAP EFFECT

(ADMACH = 10.33)

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF	2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF	474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF	936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

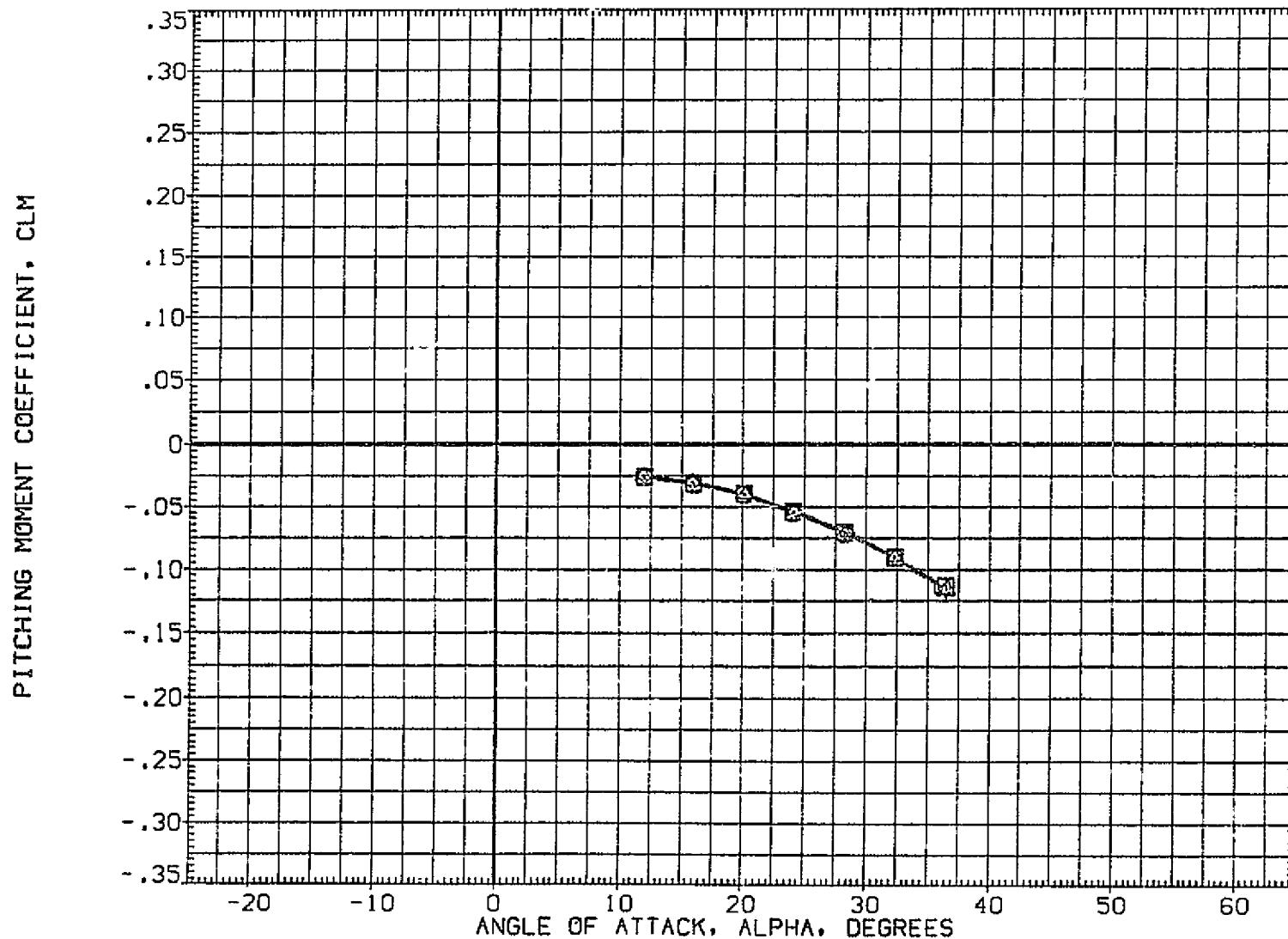


ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJC13)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF	2690.0000 SQ.FT.
(CQJO15)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF	474.8000 IN.
(CQJO14)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF	936.7000 IN.
(CQJO16)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

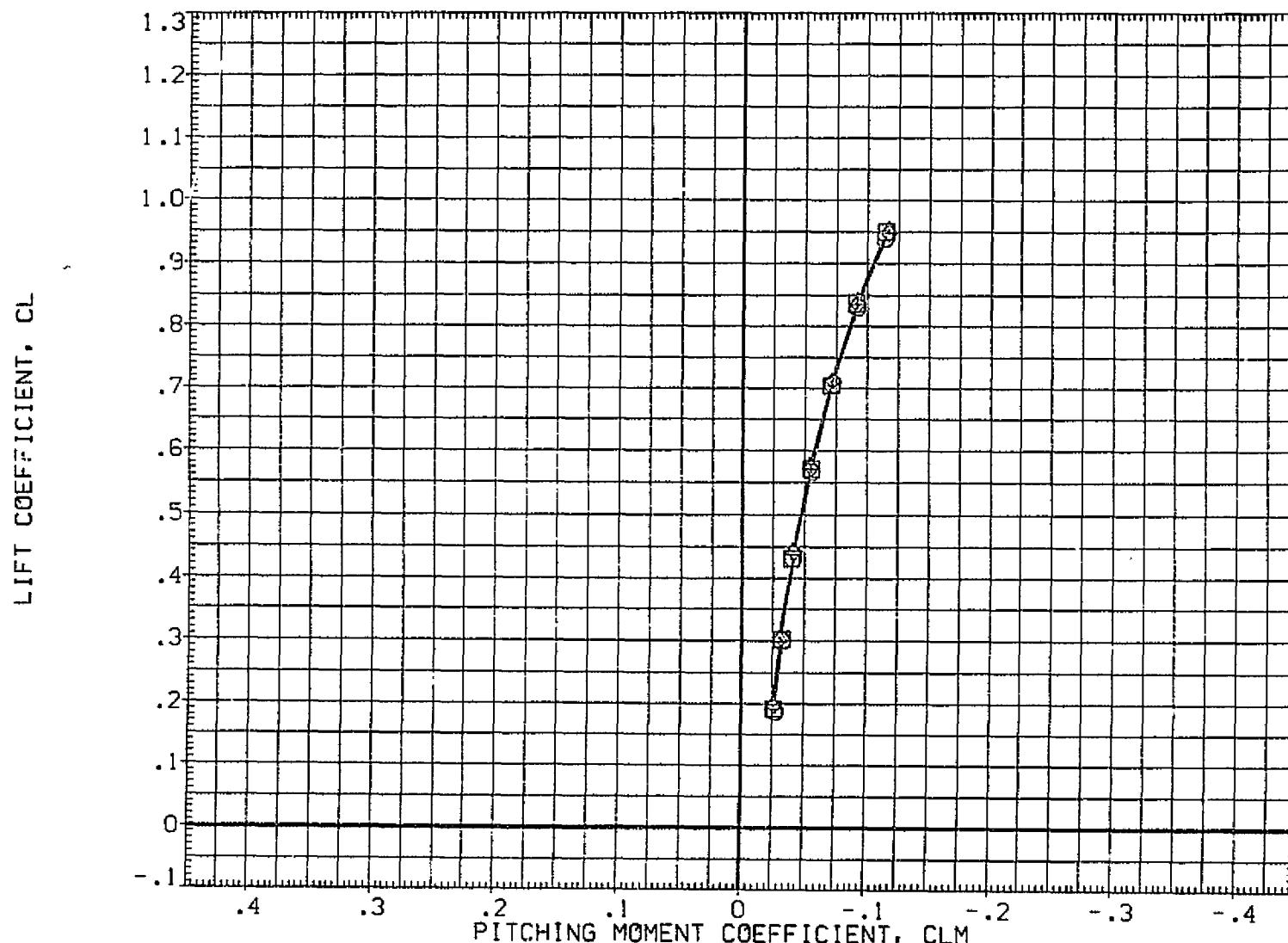


### ELEVON GAP INTERPANEL GAP EFFECT

CAMACH = 10.33

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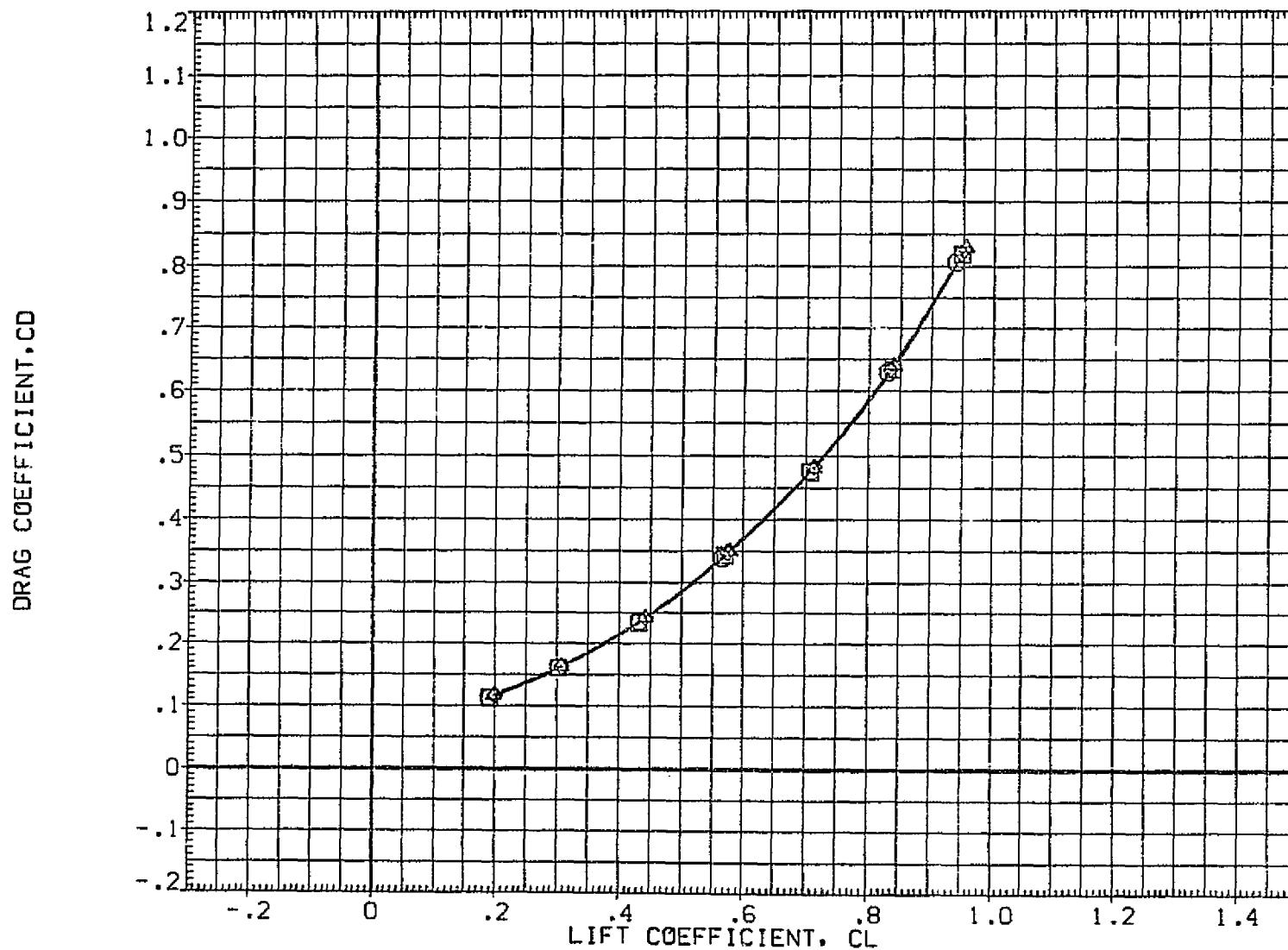
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SO.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



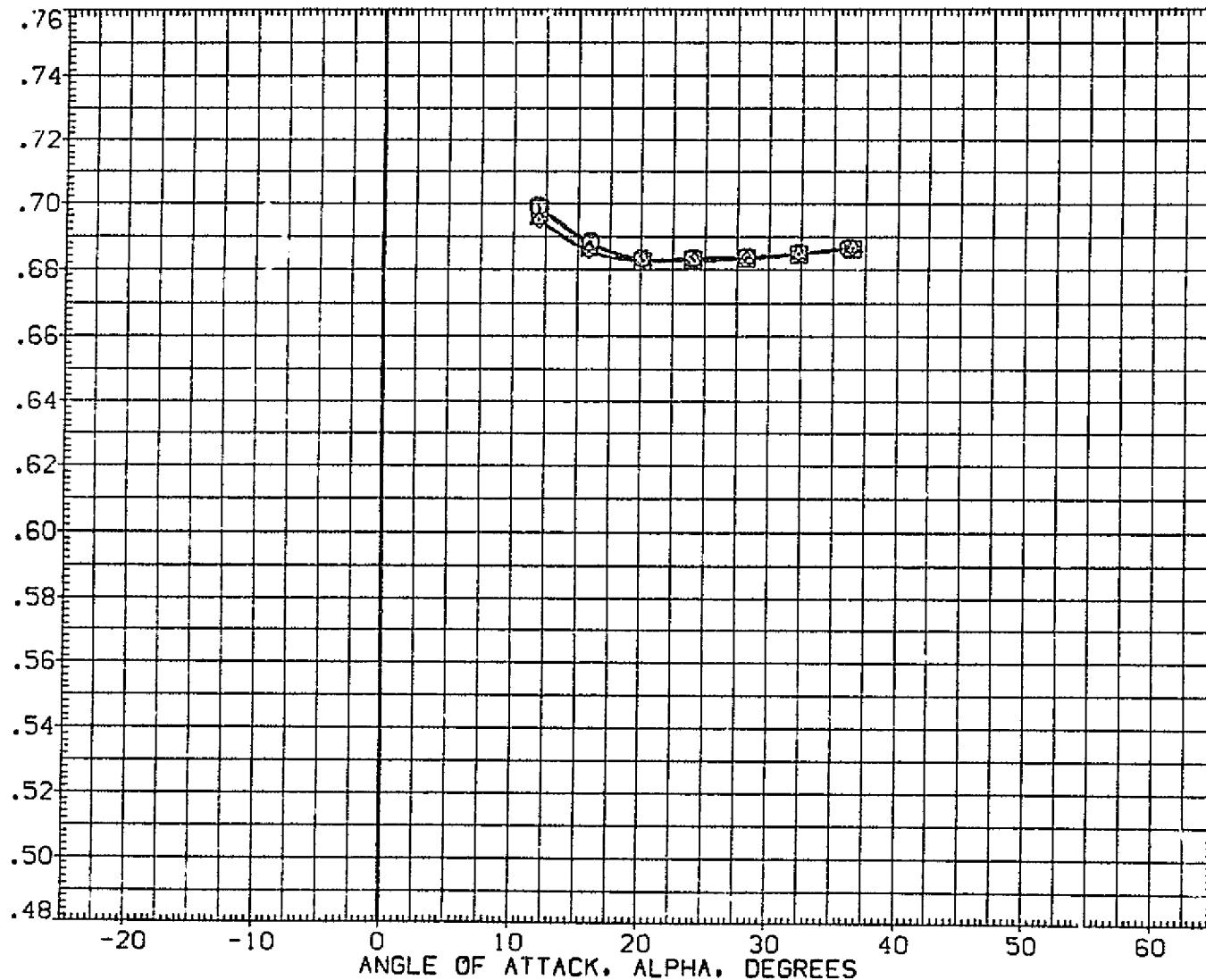
ELEVON GAP INTERPANEL GAP EFFECT

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 SQ.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. XG
						ZMRP 375.0000 IN. YG
						SCALE .0100 IN. ZG

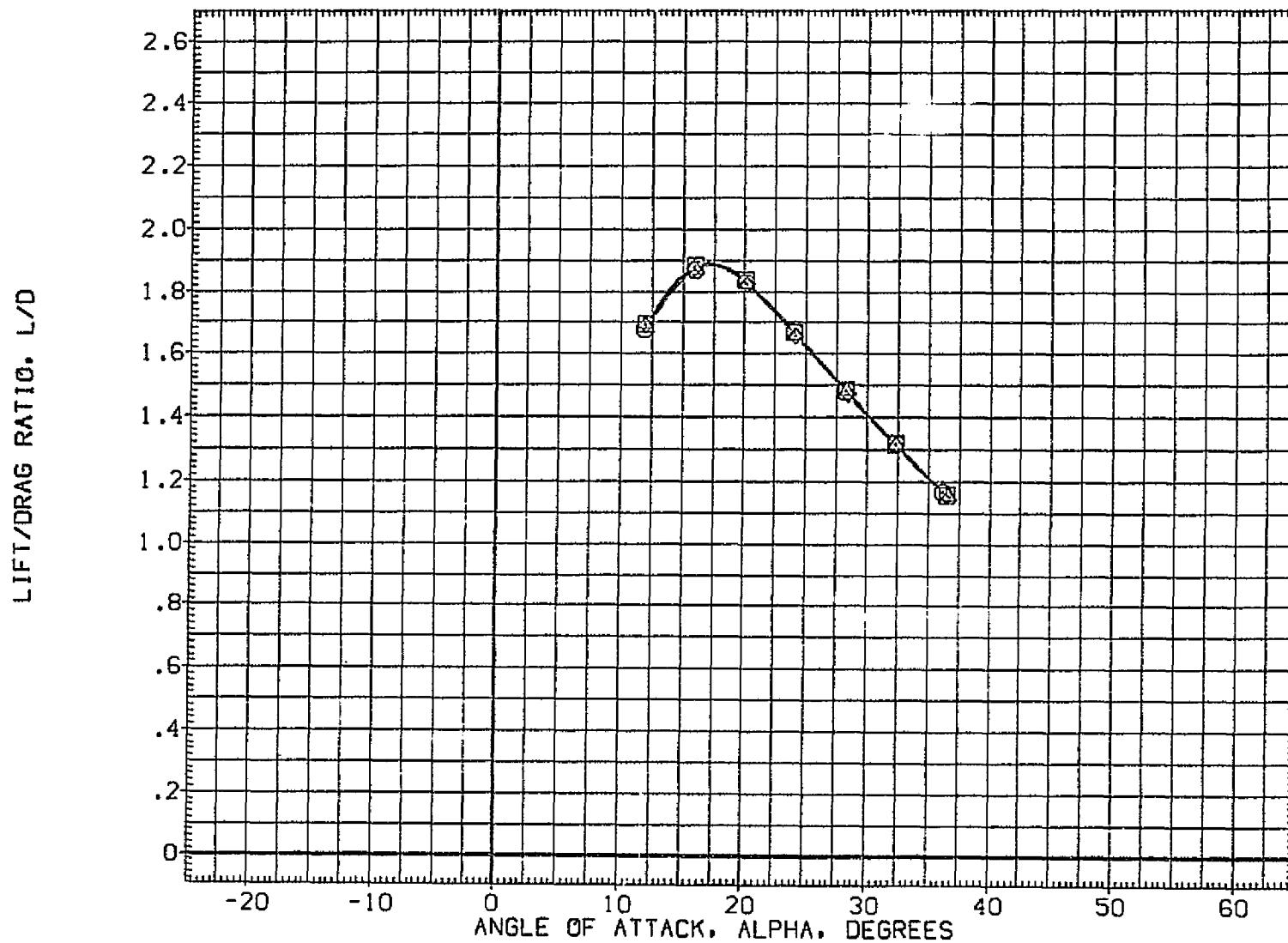
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L



ELEVON GAP INTERPANEL GAP EFFECT

CDOMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	.000	SREF 2690.0000 50.FT.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
						ZMRP .0000 IN. Y0
						SCALE .0100 IN. Z0

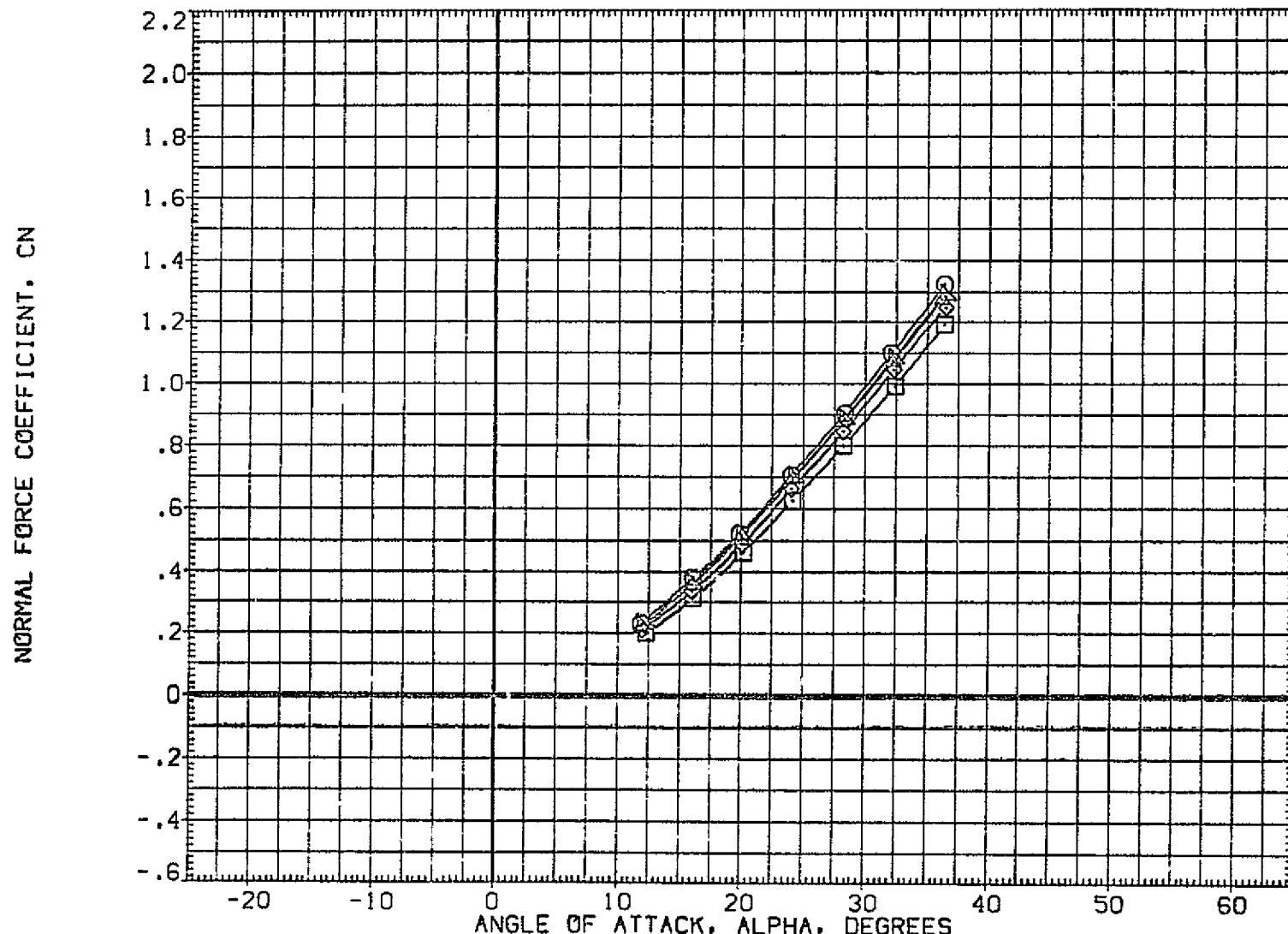


### ELEVON GAP INTERPANEL GAP EFFECT

CADMACH = 10.33

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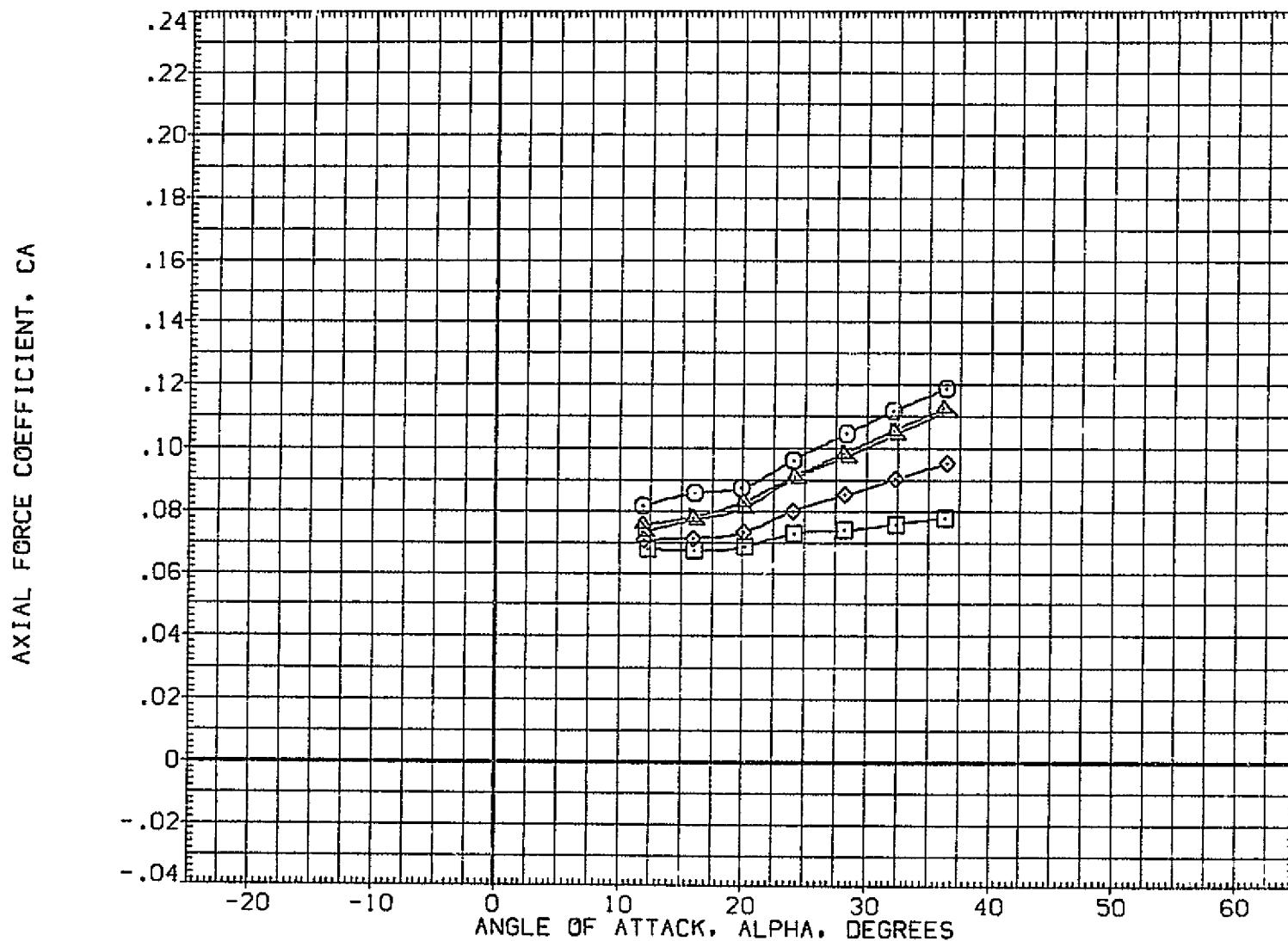
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPD8RK	ELEVTR	REFERENCE INFORMATION
(CQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJO12)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJO15)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJO17)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	ZMRP 375.0000 IN. Y0
						SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	SDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ017)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF	2690.0000 SQ.FT.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.0000	LREF	474.8000 IN.
(CQJ015)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF	936.7000 IN.
(DQJ017)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.983	16.300	55.000	15.000	XMRP	1076.7000 IN. XG
(EQJ017)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP	.0000 IN. YG
					ZMRP	375.0000 IN. ZG	
					SCALE	.0100	

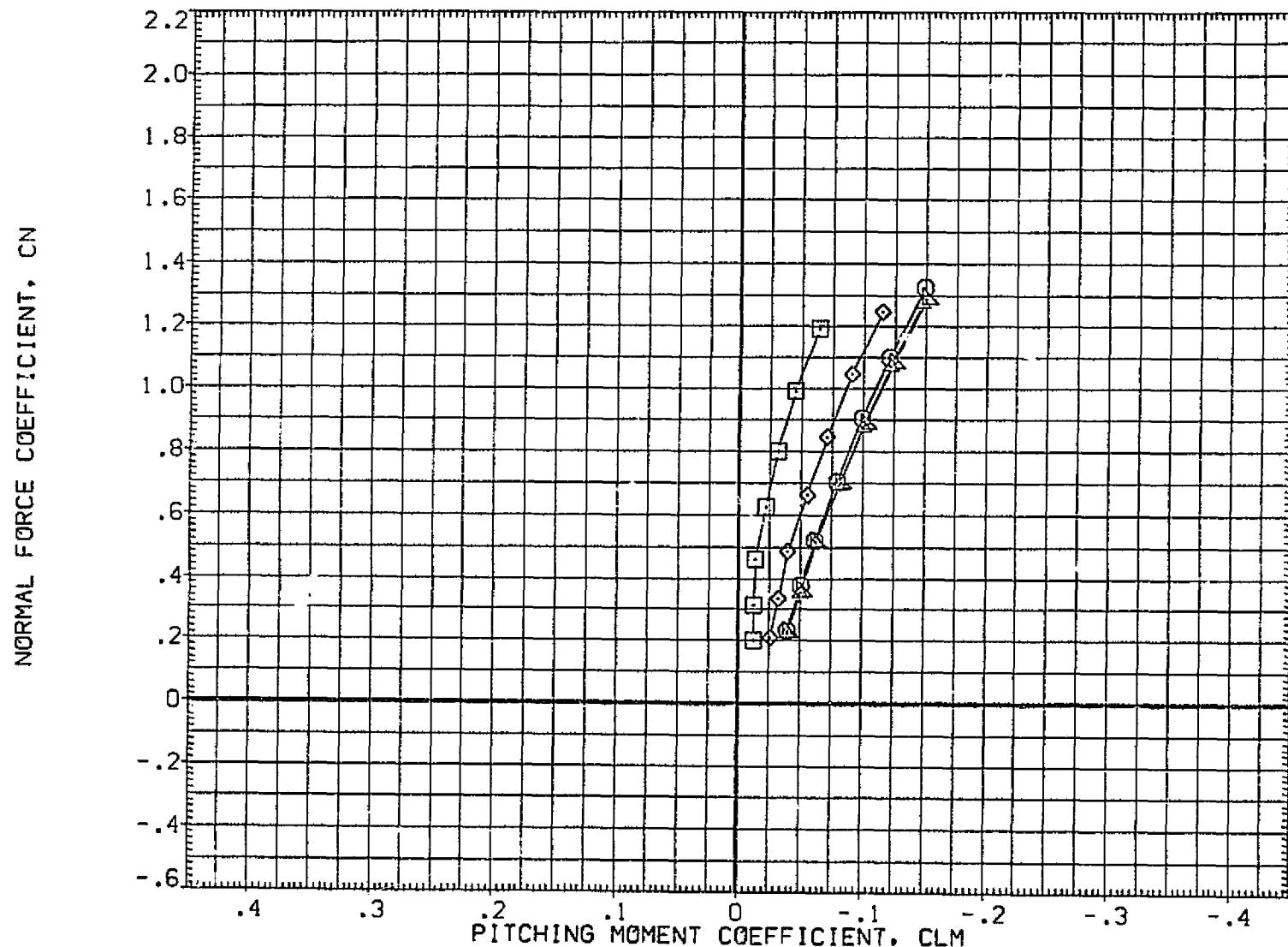


### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

CADMACH = 10.31

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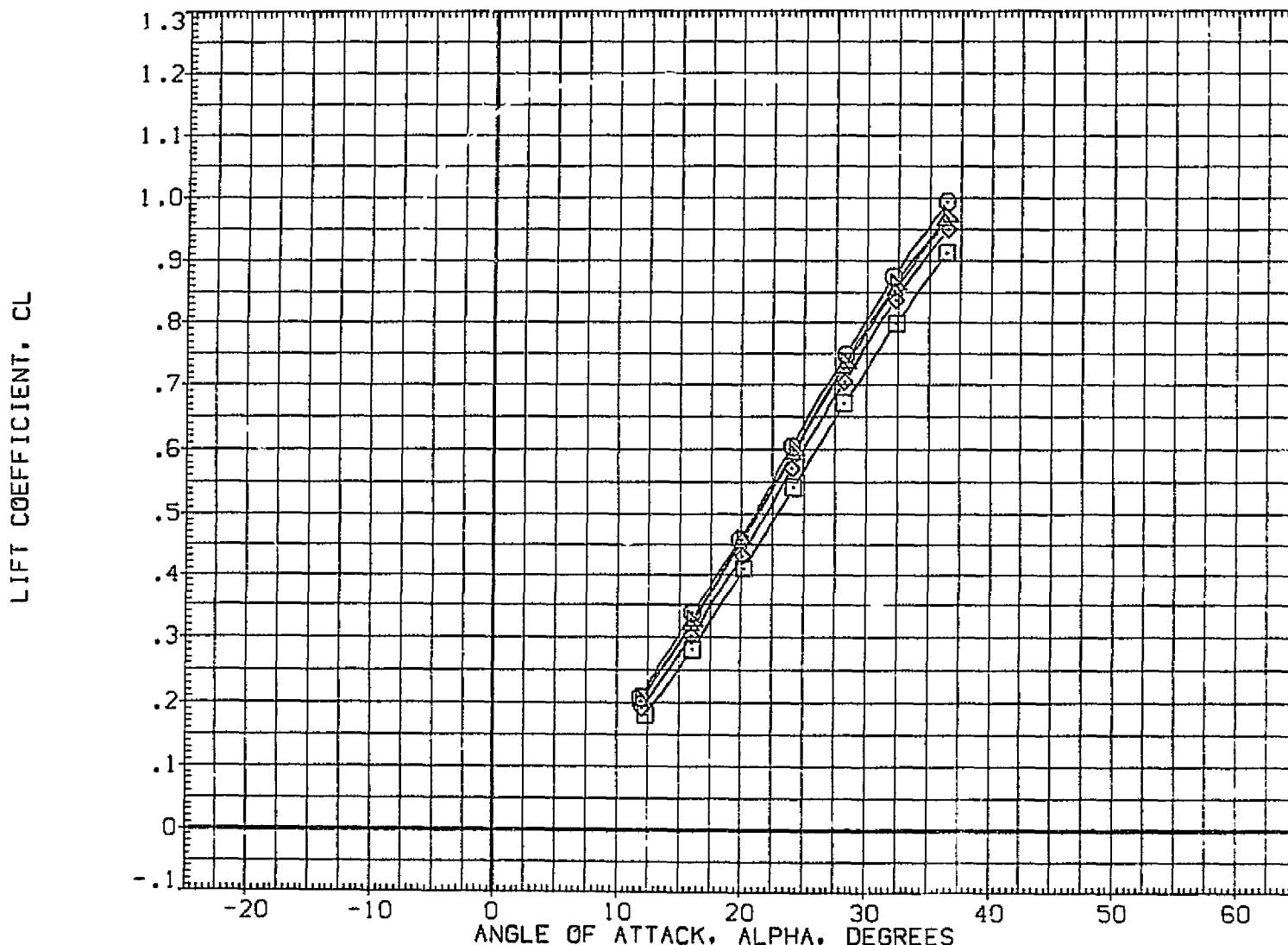
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-G OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-O OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-O OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-O OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-O OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

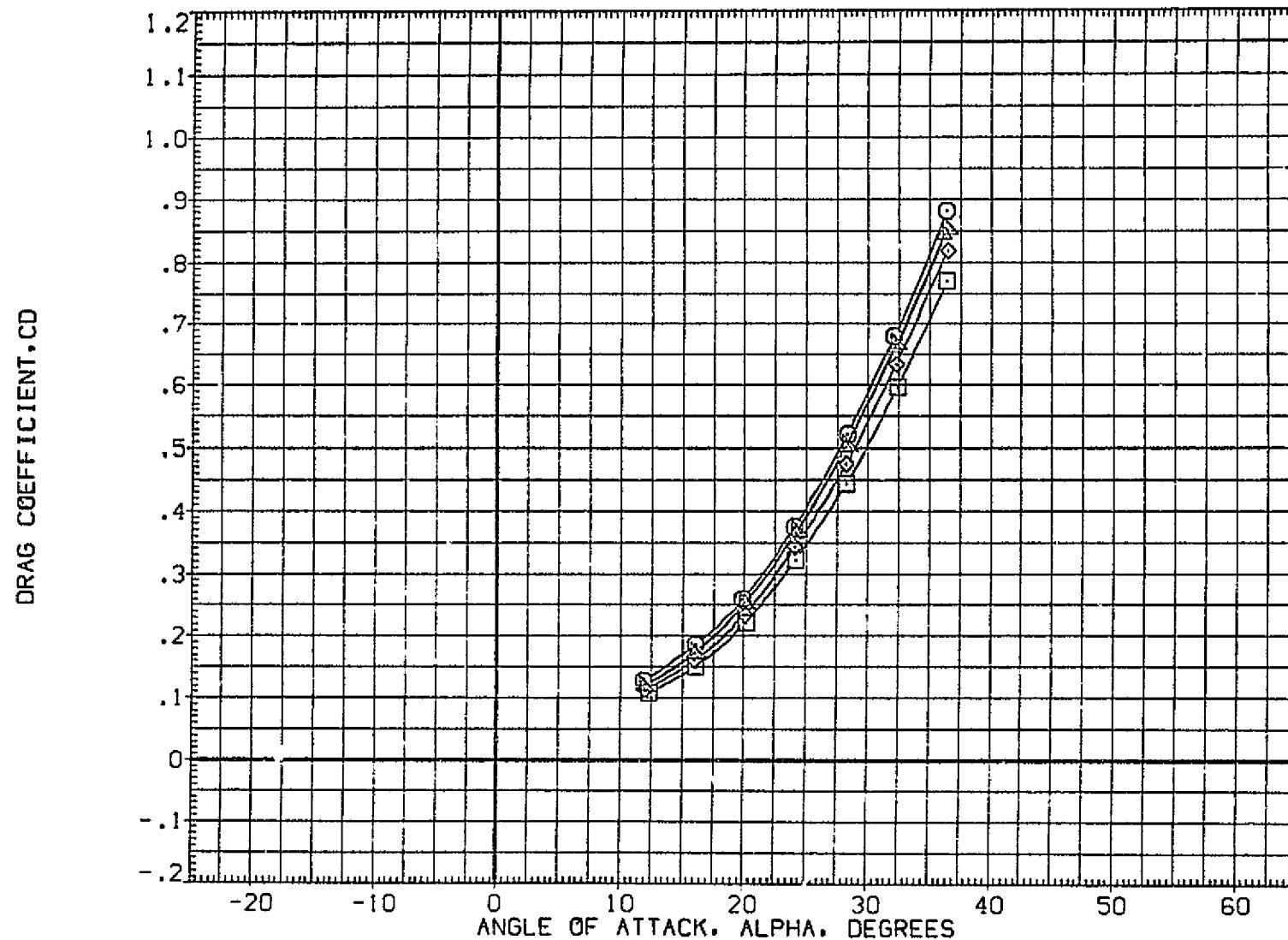


### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

$C_{\text{D}}/\text{MACH} = 10.31$

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF	2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF	474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF	936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP	1076.7000 IN. X0
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

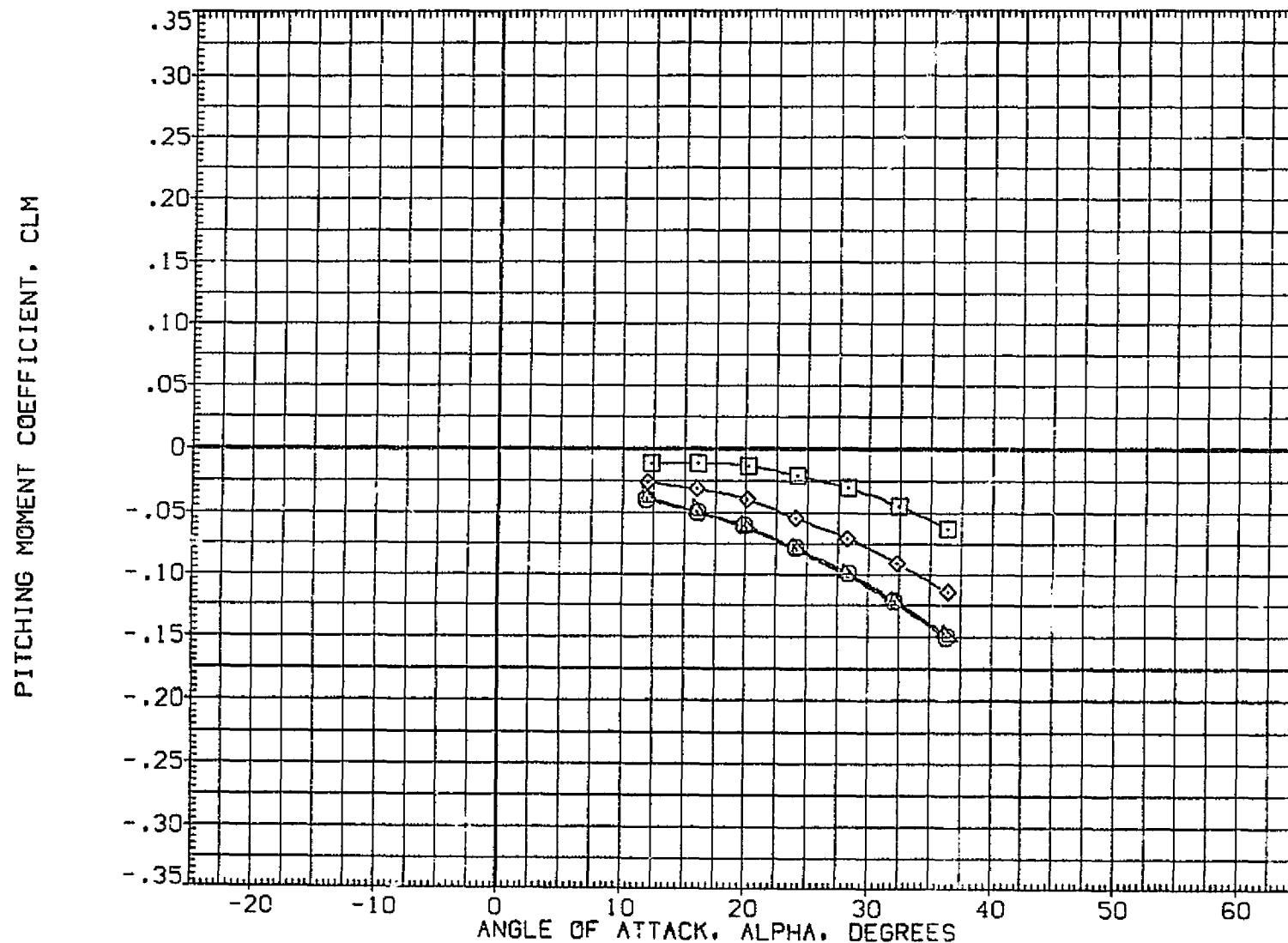


### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

PE

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJO17)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF	2690.0000 SQ.FT.
(CQJO12)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF	474.8000 IN.
(DQJO15)	× OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF	936.7000 IN.
(DQJO17)	× OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP	1076.7000 IN.
(EQJO17)	▷ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP	.0000 IN. YO
						ZMRP	375.0000 IN. ZO
						SCALE	.0100

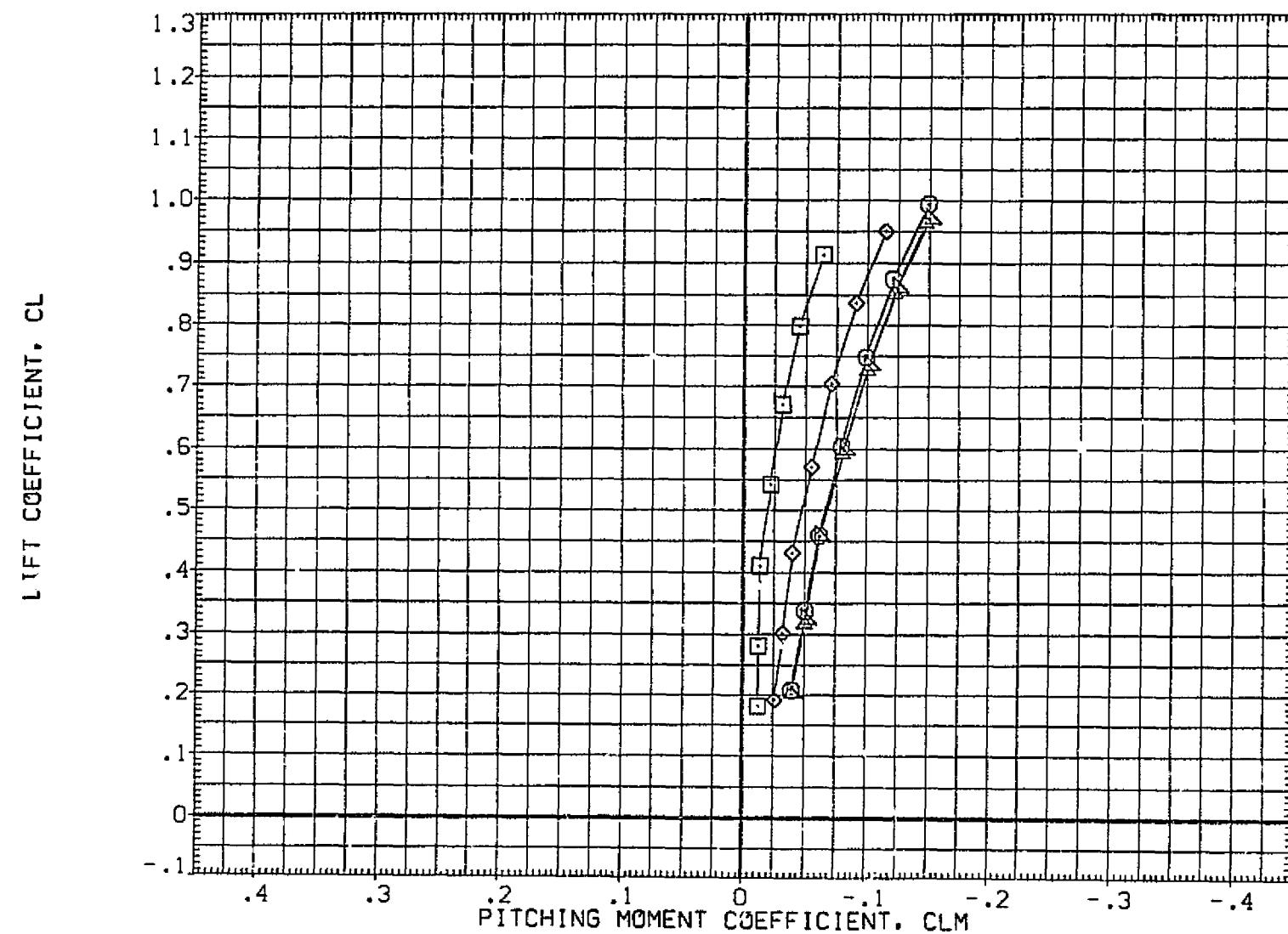


### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF	2690.0000 SD.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.999	16.300	55.000	10.000	LREF	474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF	936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP	1076.7000 IN. XG
(EQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100

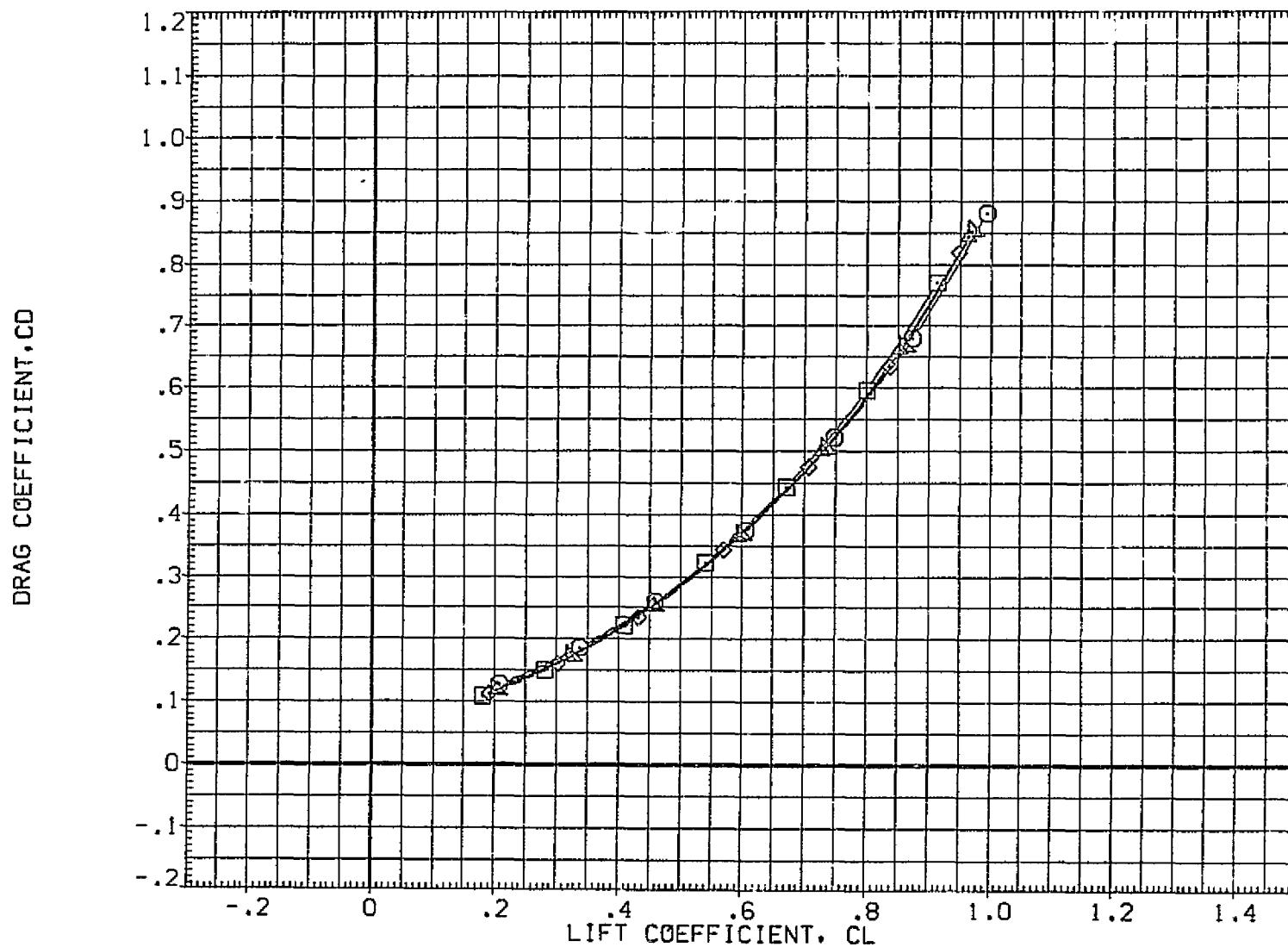


EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(COJ017)	O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	J_F	2690.0000 SQ.FT.
(COJ017)	O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF	474.8000 IN.
(COJ017)	O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	SREF	936.7000 IN.
(DQJ017)	X OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP	1076.7000 IN. X0
(EQJ017)	V OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	ZMRP	.0000 IN. Y0
						SCALE	375.0000 IN. Z0
							.0100



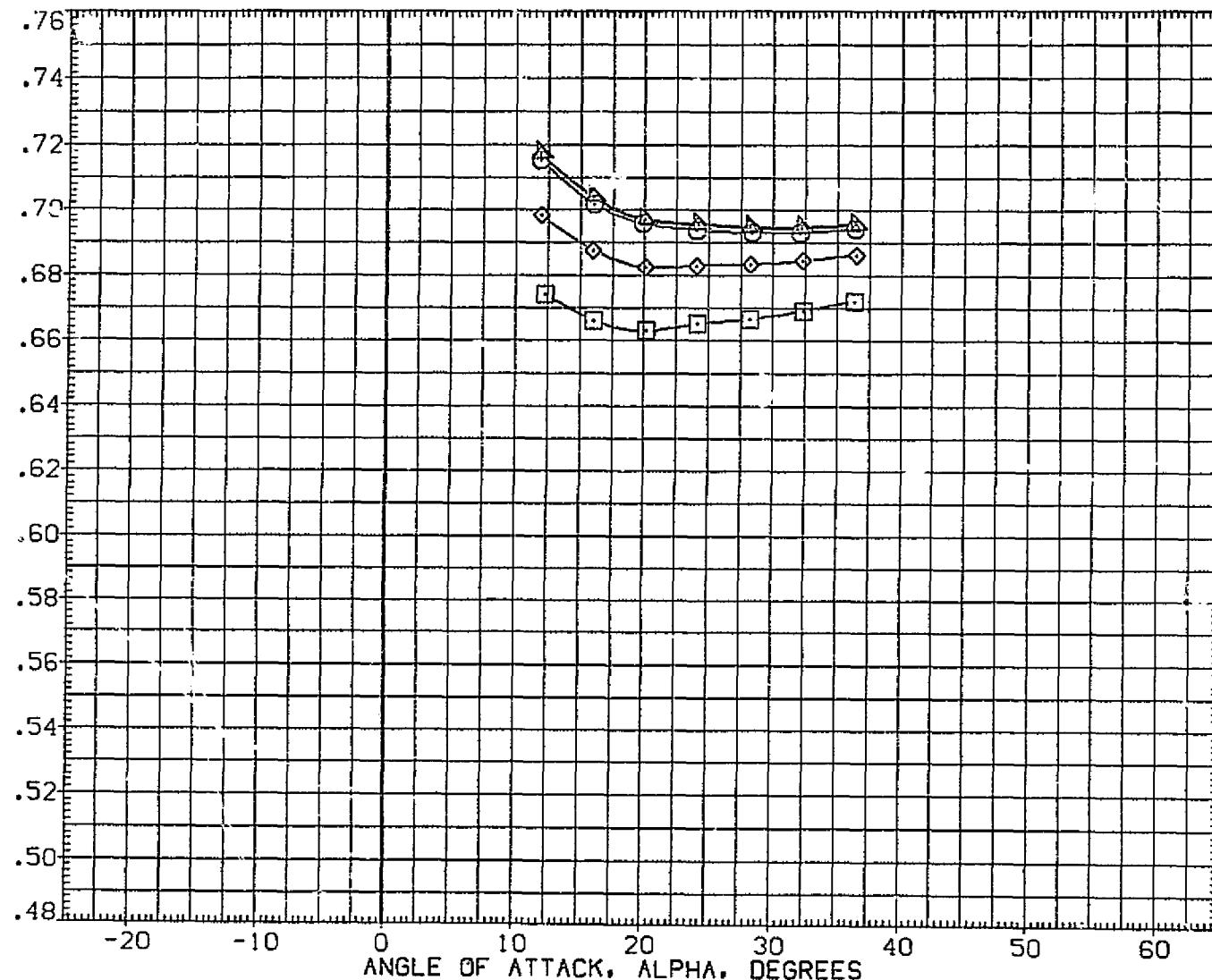
### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.0000	LREF 474.8000 IN.
(CQJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF 936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
(EGJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP .0000 IN. Y0
					ZMRP 375.0000 IN. Z0	
					SCALE .0100	

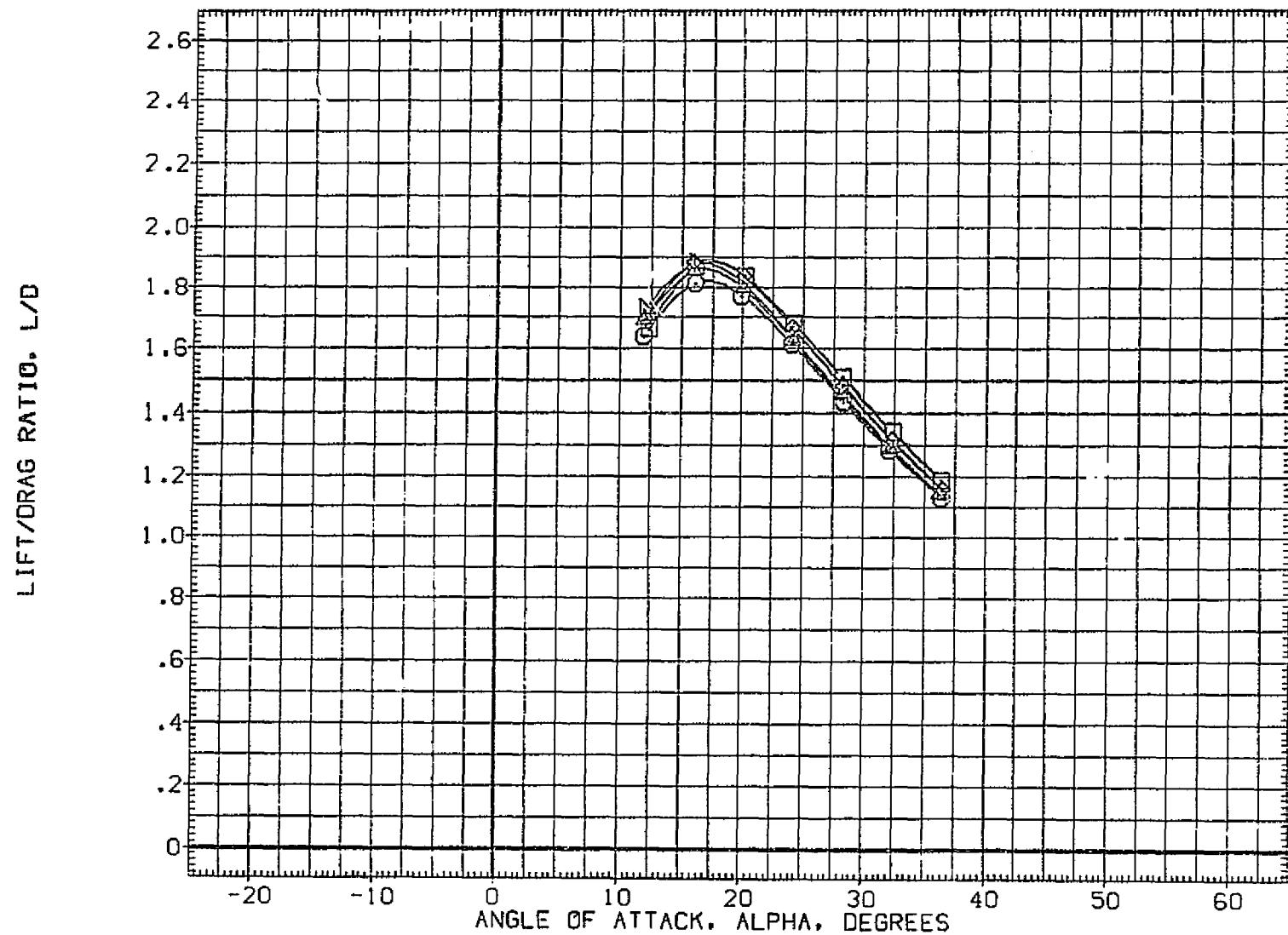
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE	INFORMATION
(COJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.625	16.300	55.000	15.000	SREF	2690.0000 SQ.FT.
(COJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	LREF	474.8000 IN.
(COJ015)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	55.000	10.000	BREF	936.7000 IN.
(DQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	16.300	55.000	15.000	XMRP	1076.7000 IN. X0
(EIQJ017)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	1.244	16.300	55.000	15.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

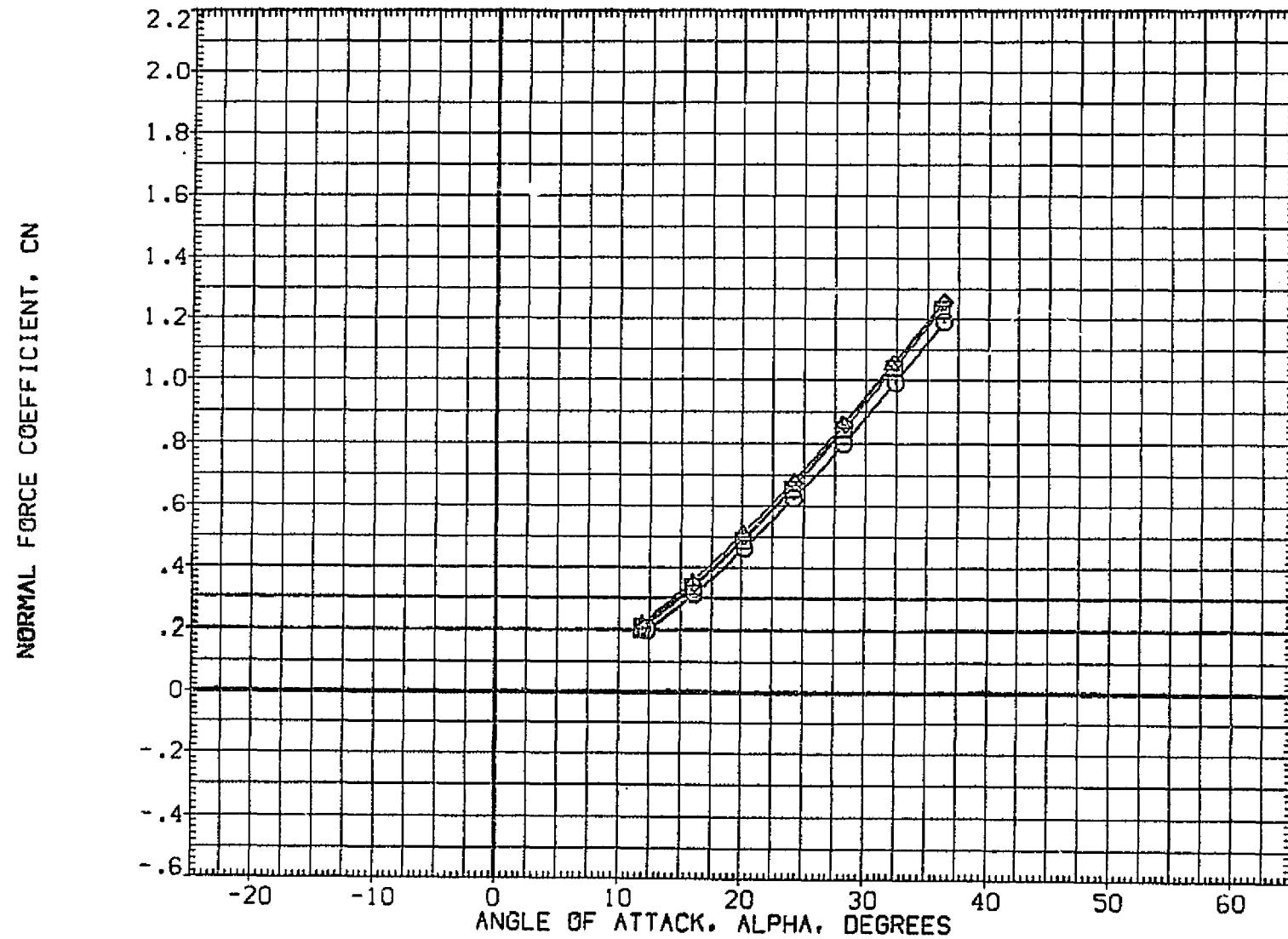


### EFFECT OF POSITIVE DEFLECTED UNSEALED ELEVONS

CADMACH = 10.31

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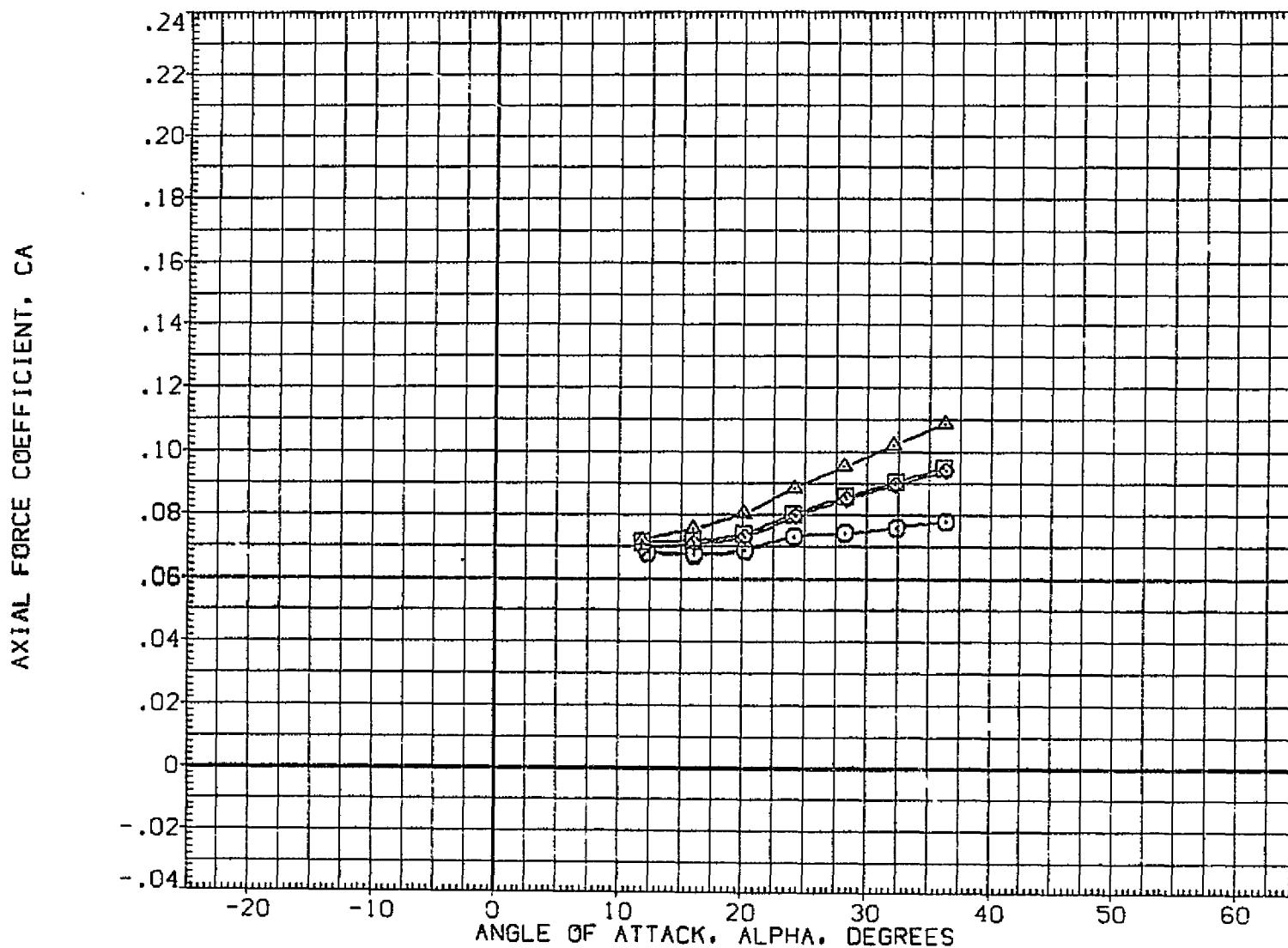
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF	2690.0000	SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF	474.8000	IN.
(DQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF	936.7000	IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP	1076.7000	IN. XG
						YMRP	.0000	IN. YG
						ZMRP	375.0000	IN. ZG
						SCALE	.0100	



EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	10.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
		1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
					ZMRP .0000 IN. Y0	
					SCALE .0100	

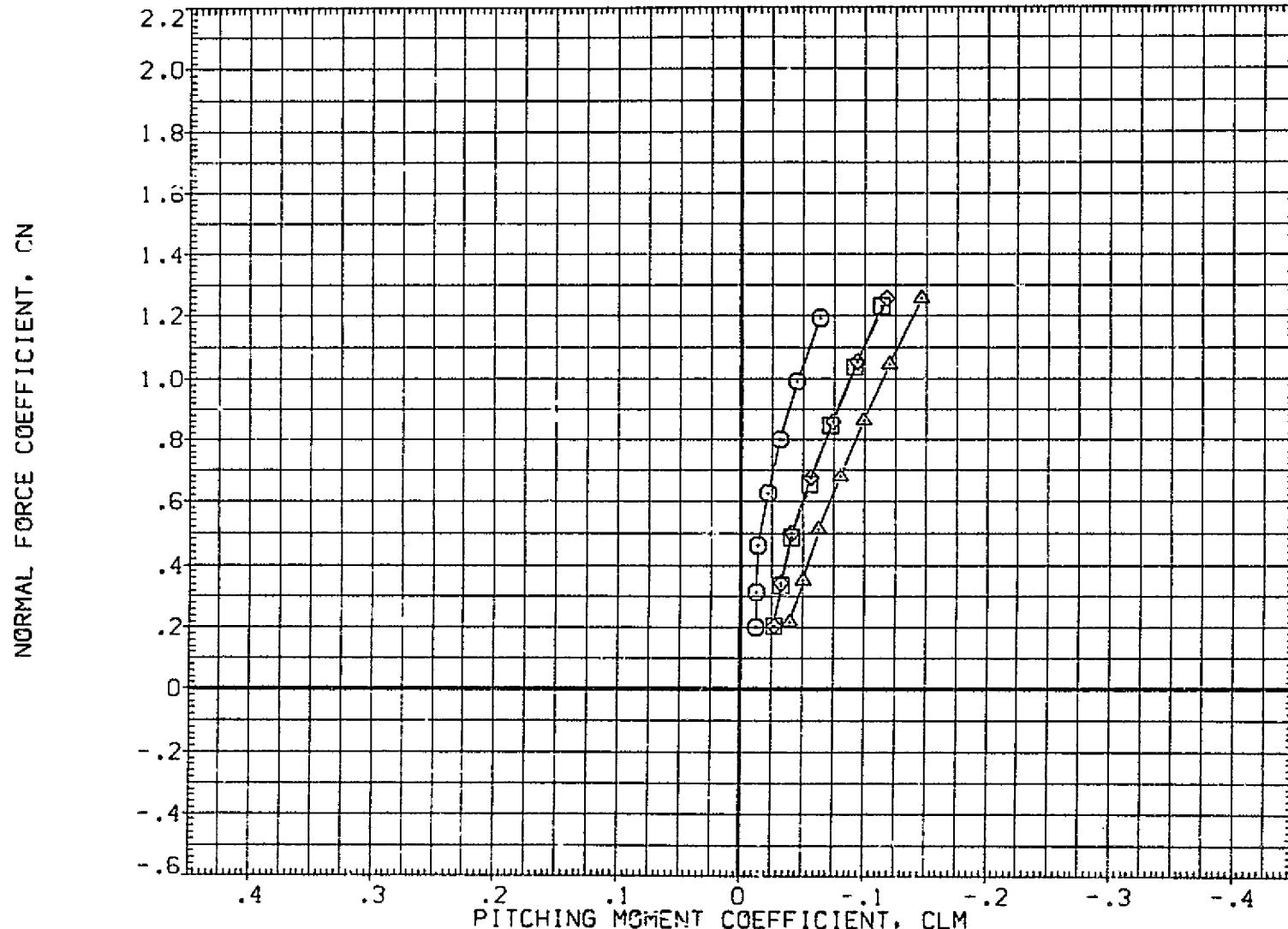


### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(DQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



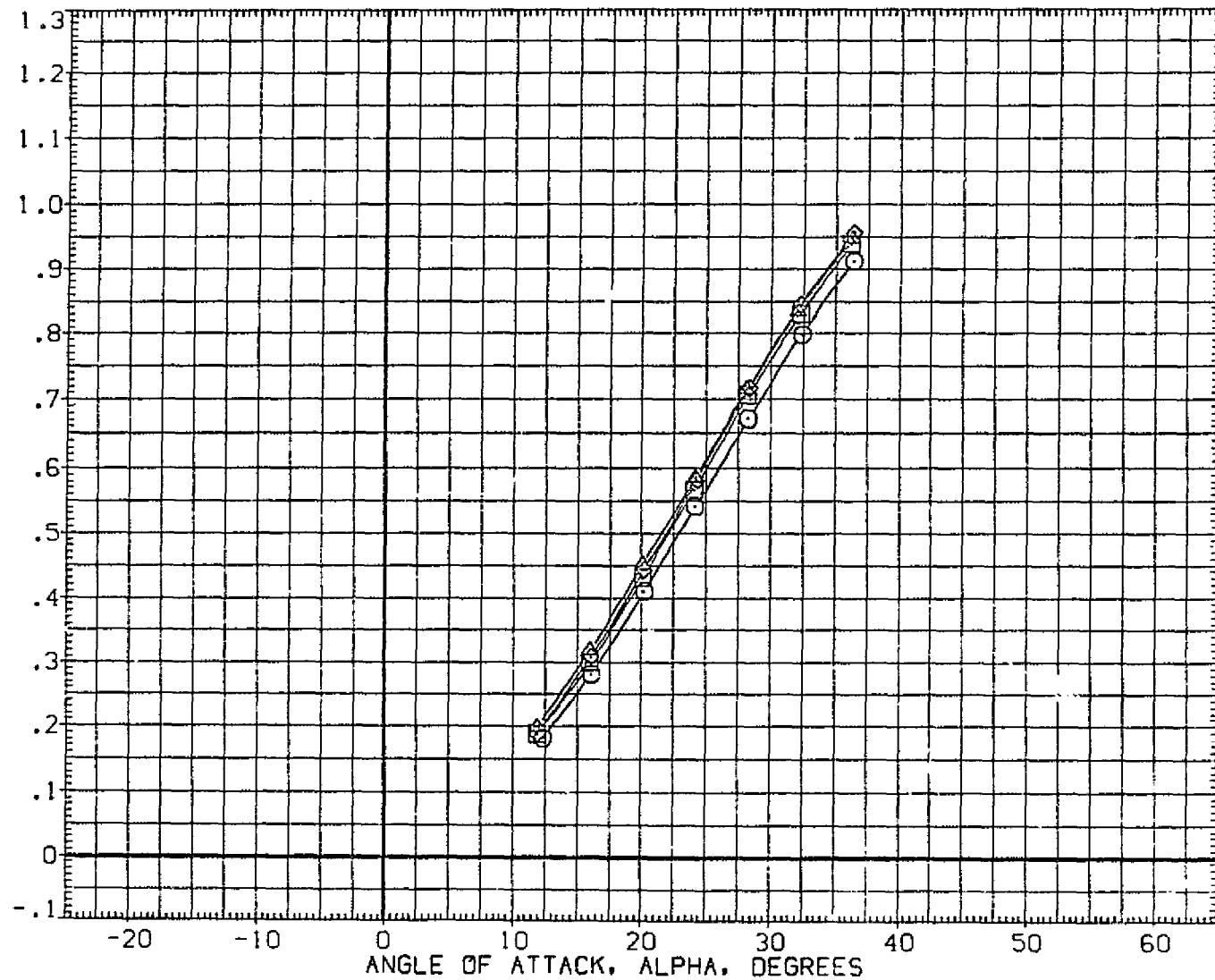
### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ012)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	,000	SREF	2690.0000 SQ.FT.
(CQJ013)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF	474.8000 IN.
(DQJ013)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF	936.7000 IN.
(CQJ018)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP	1076.7000 IN. XD
						YMRP	,0000 IN. YO
						ZMRP	375.0000 IN. ZO
						SCALE	.0100

LIFT COEFFICIENT, CL

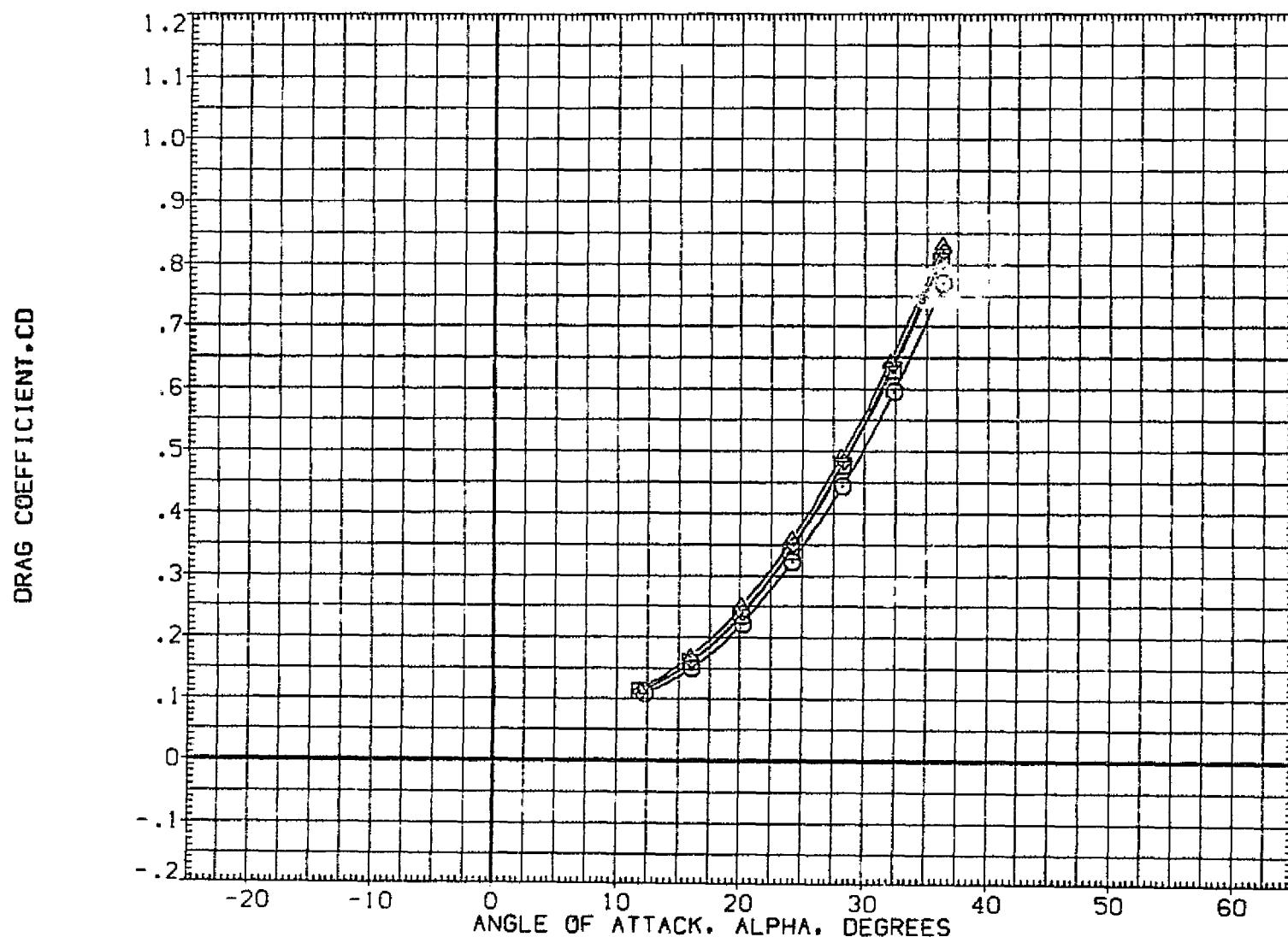


### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(DQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

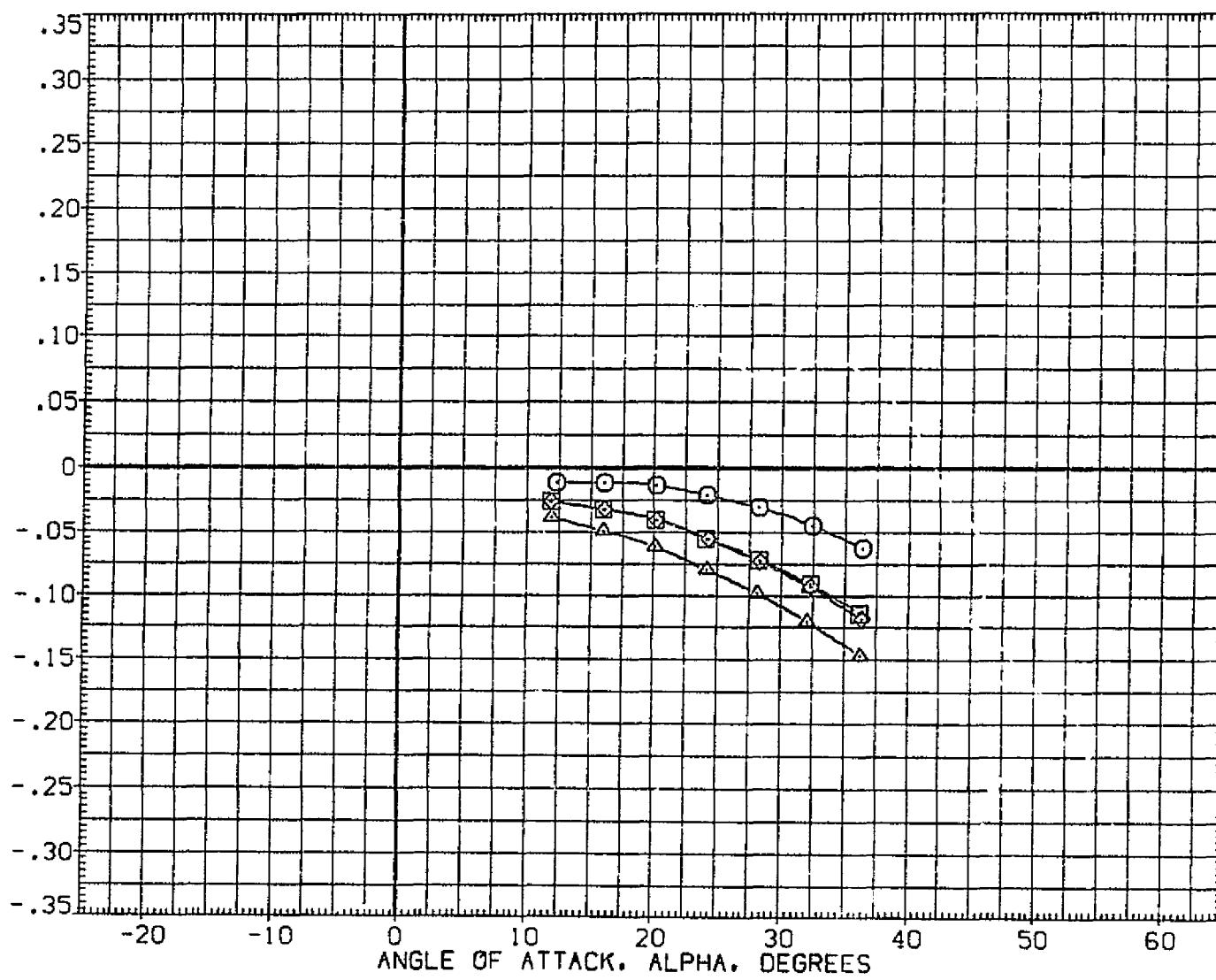


EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.999	16.300	55.000	.000	SREF	2620.0000 SQ.FT.
(CQJ013)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF	474.8000 IN.
(DQJ013)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF	936.7000 IN.
(CQJ018)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

PITCHING MOMENT COEFFICIENT, CLM

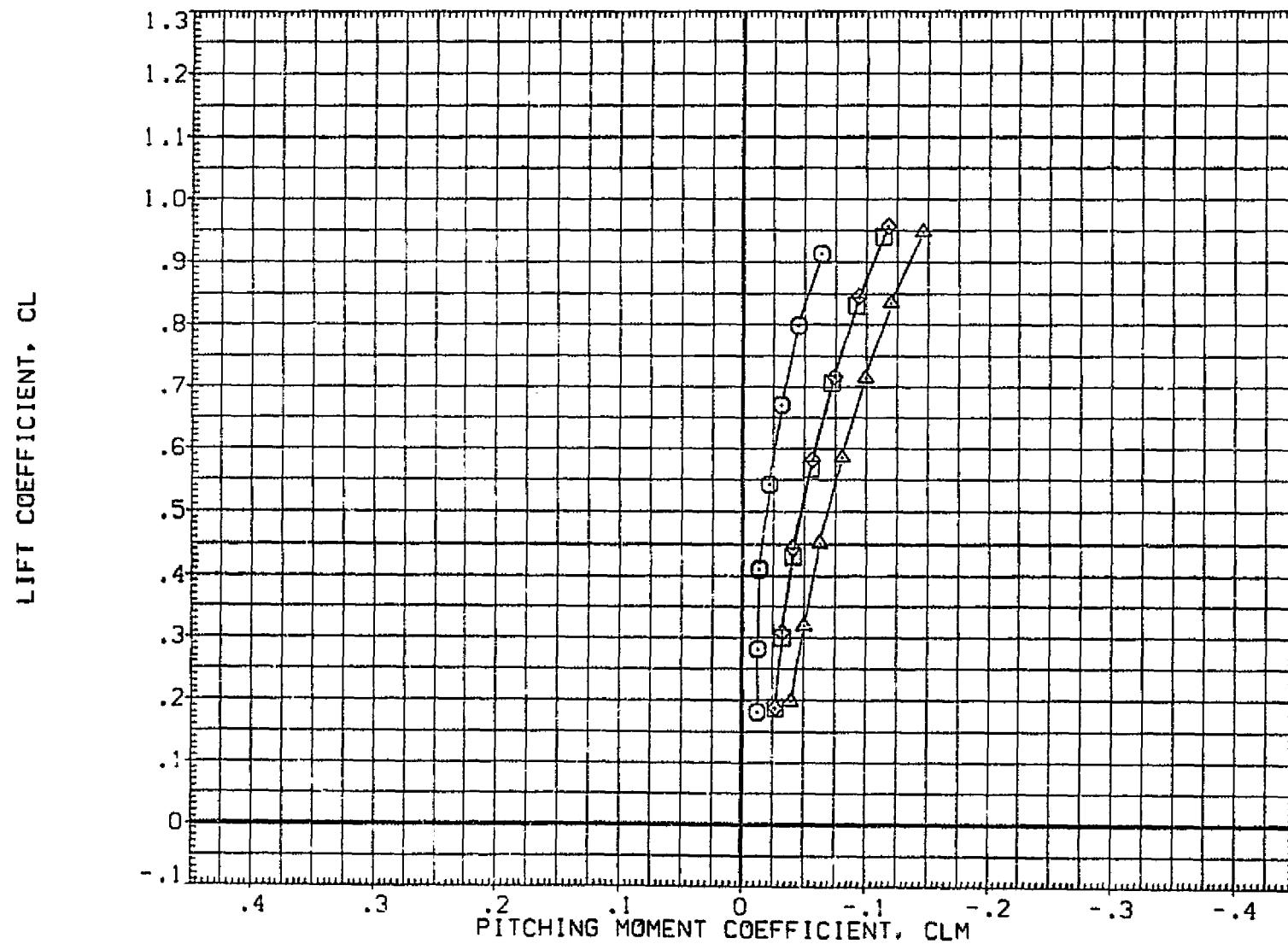


### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

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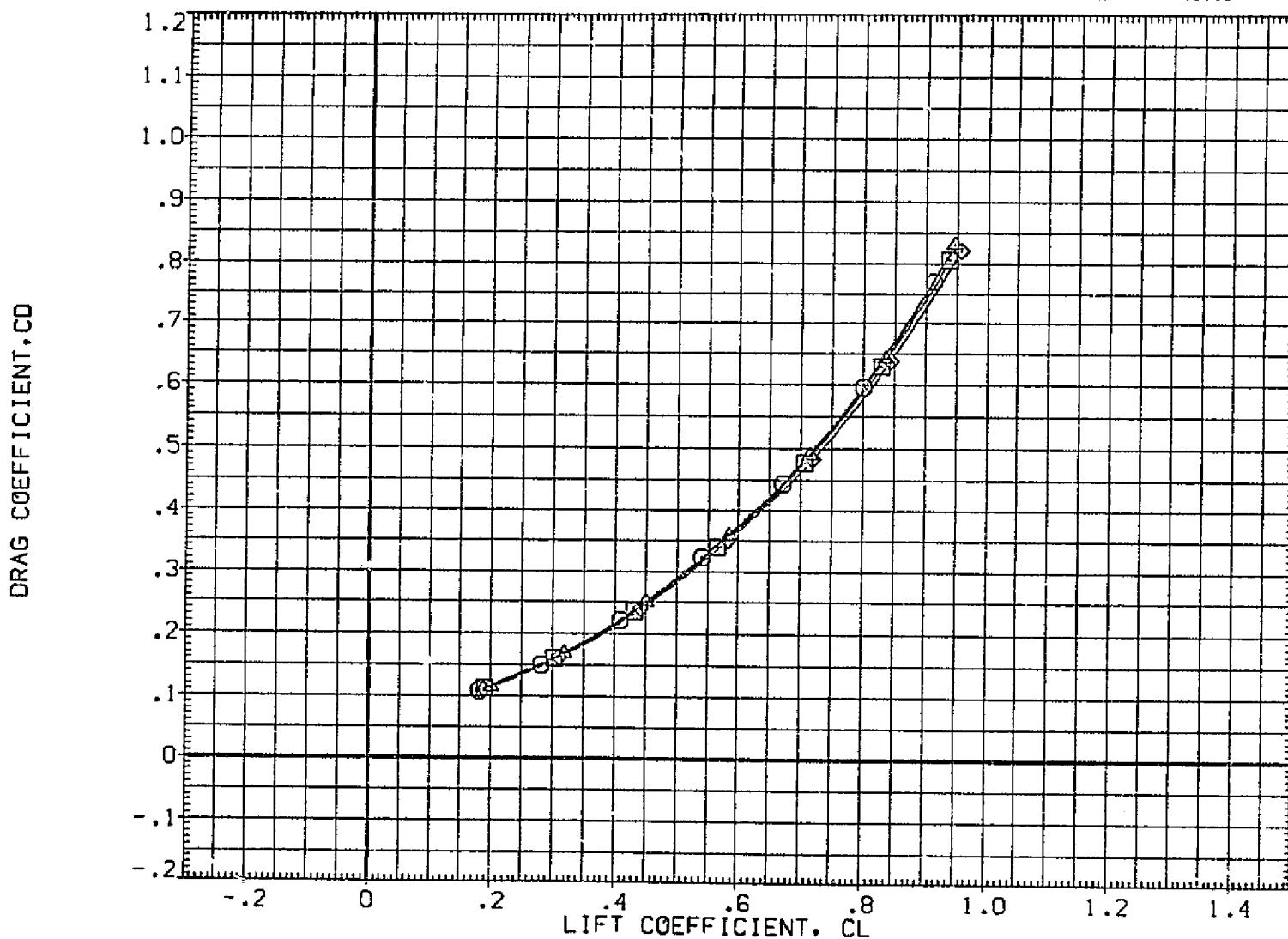
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.989	16.300	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	.960	16.300	55.000	10.000	LREF 474.8000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	1.246	16.300	55.000	10.000	BREF 936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

CADMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16,300	55,000	.0000	SREF 2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16,300	55,000	10,000	LREF 474.8000 IN.
(DQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.1246	16,300	53,000	10,000	BREF 936.7000 IN.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.1200	16,300	55,000	15,000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



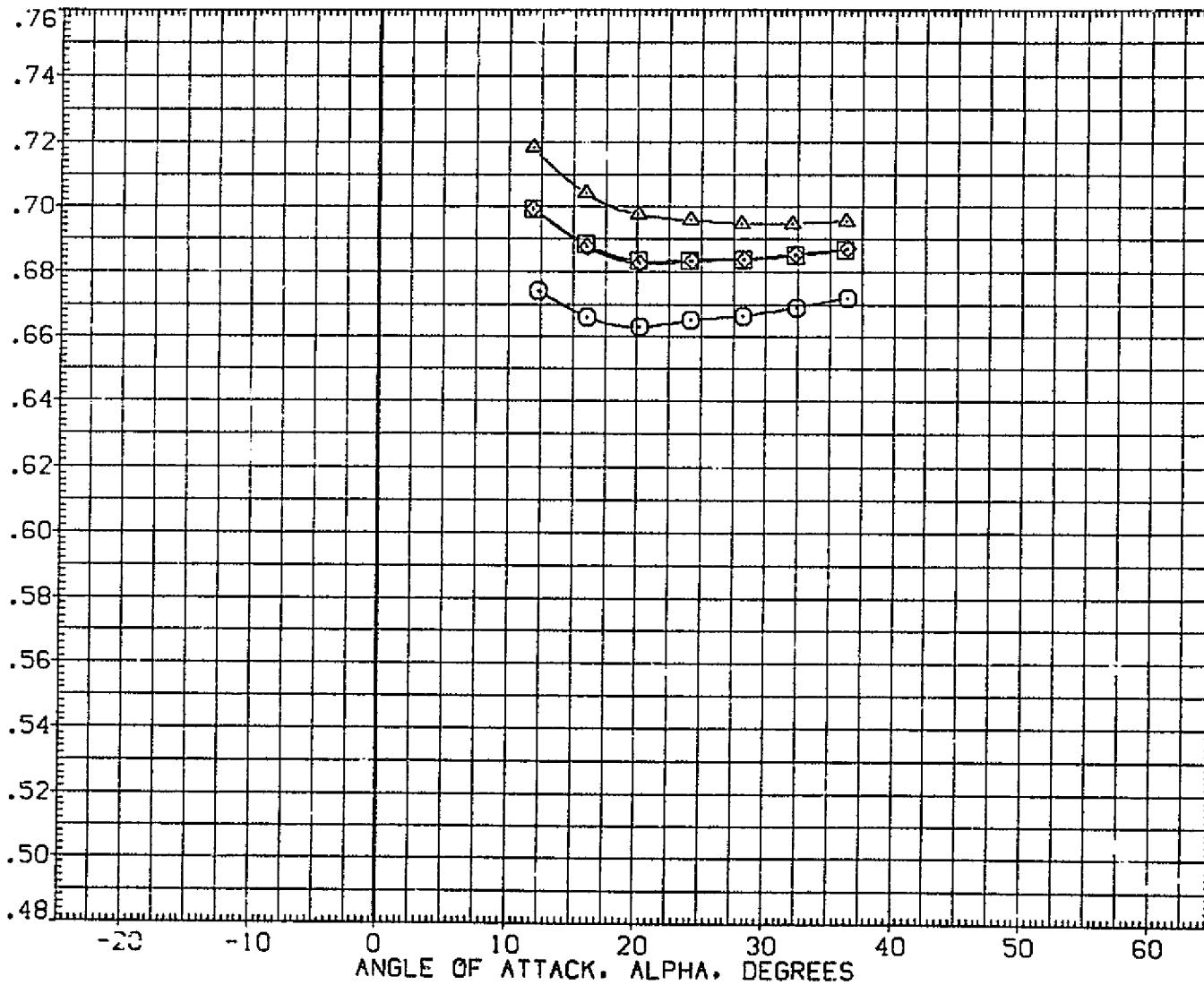
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

(A)MACH = 10.33

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CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ012)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ013)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF	474.8000 IN.
(CQJ013)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF	936.7000 IN.
(CQJ018)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP	1076.7000 IN. XG
						YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100



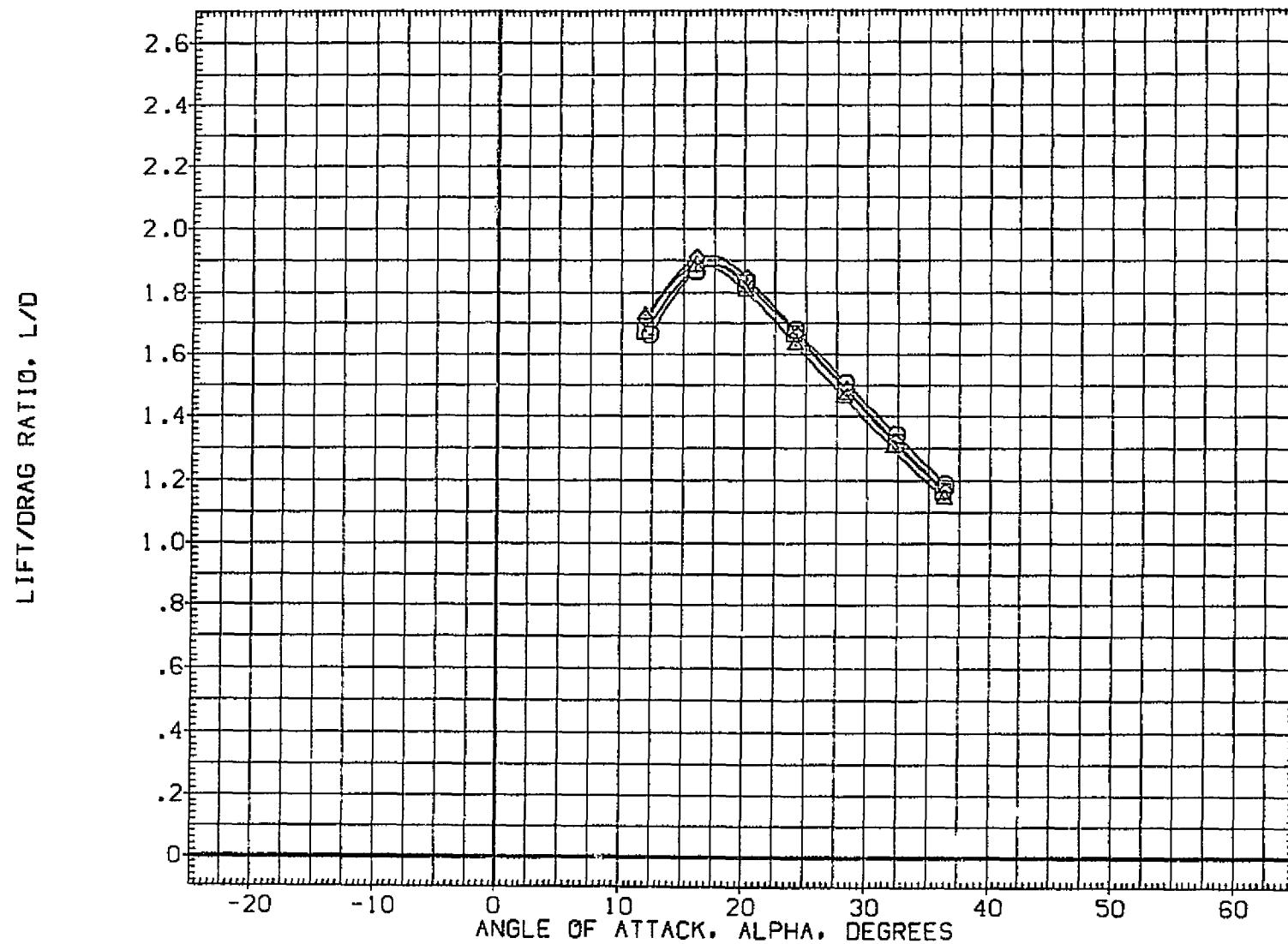
EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

C<sub>A</sub>MACH = 10.33

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(57)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	10.000	SREF	2690.0000 SQ.FT.
(CQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	55.000	10.000	LREF	474.8000 IN.
(DQJ013)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.246	16.300	55.000	10.000	BREF	936.7000 IN.
(CQJ018)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.200	16.300	55.000	15.000	XMRP	1076.7000 IN.
						YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100

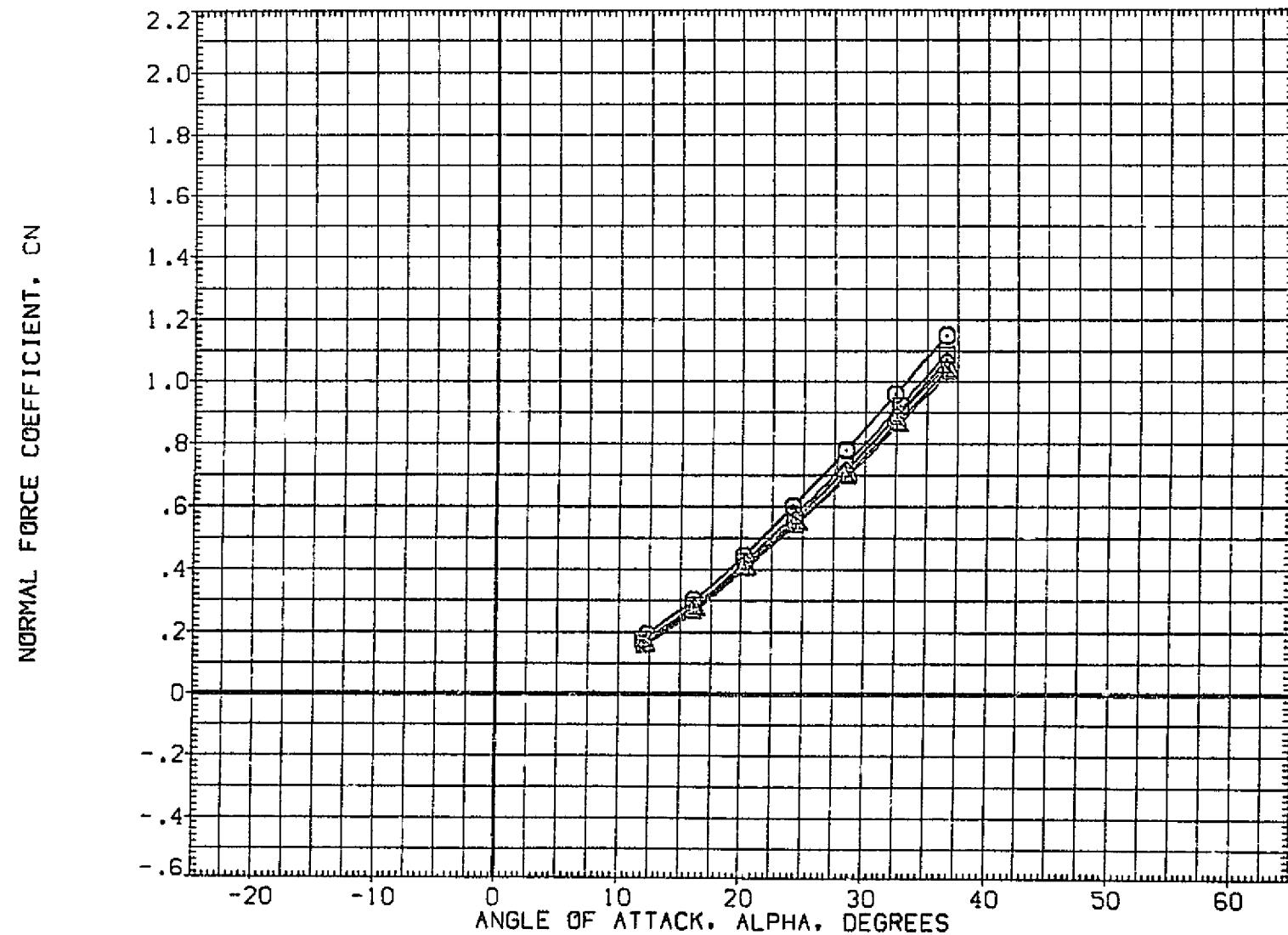


### EFFECT OF POSITIVE DEFLECTED SEALED ELEVONS

$\text{MACH} = 10.33$

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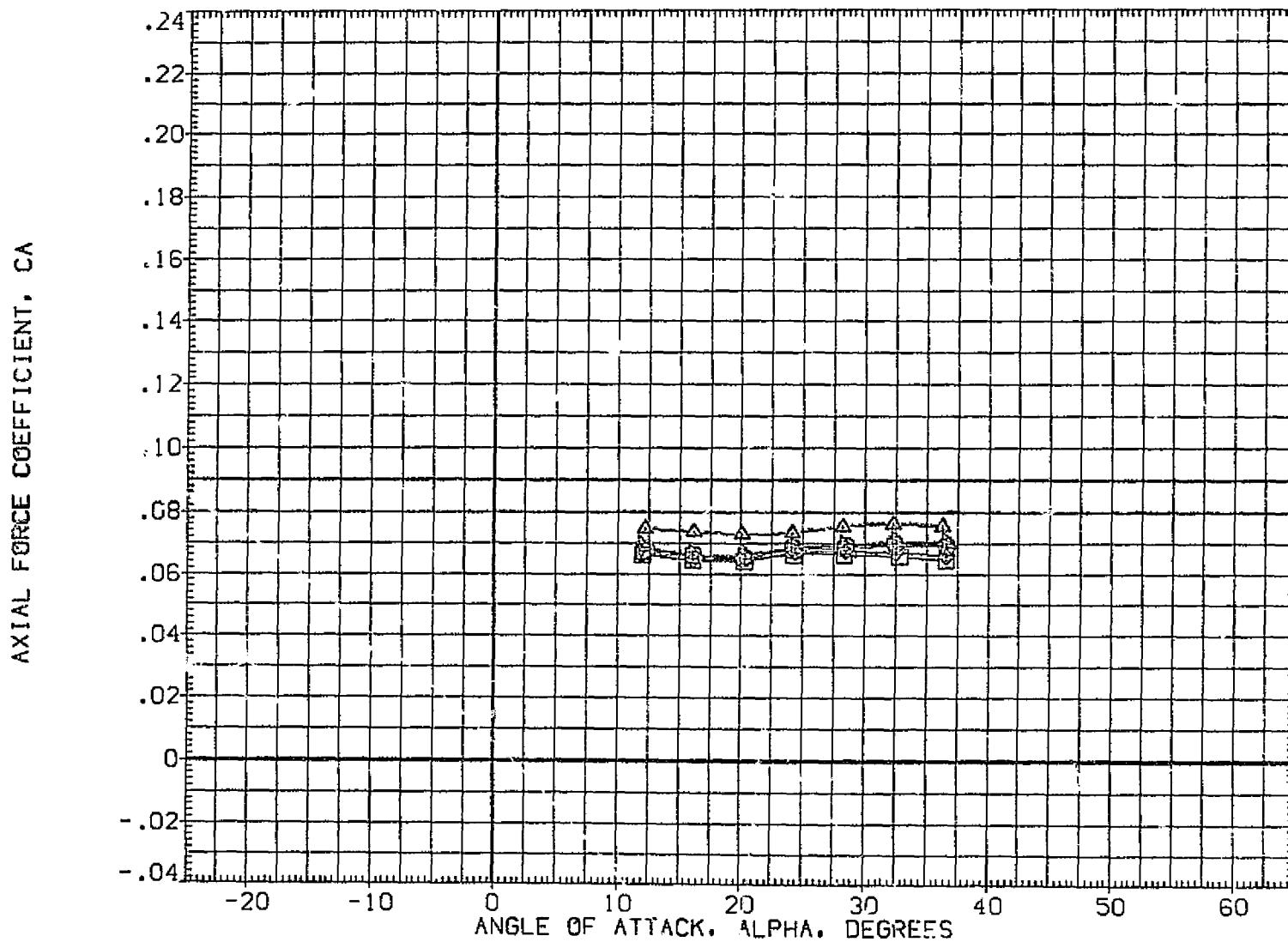
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	-10.000	SREF 2690.0000 SQ.FT.
(CQJ019)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.6000 IN.
(CQJ020)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. XG
(DQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. YG
(CQJ022)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. ZG
					SCALE .0100	



EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SO. FT.
(CQJ012)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	MRP 1076.7000 IN. X0
(DRJ021)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100



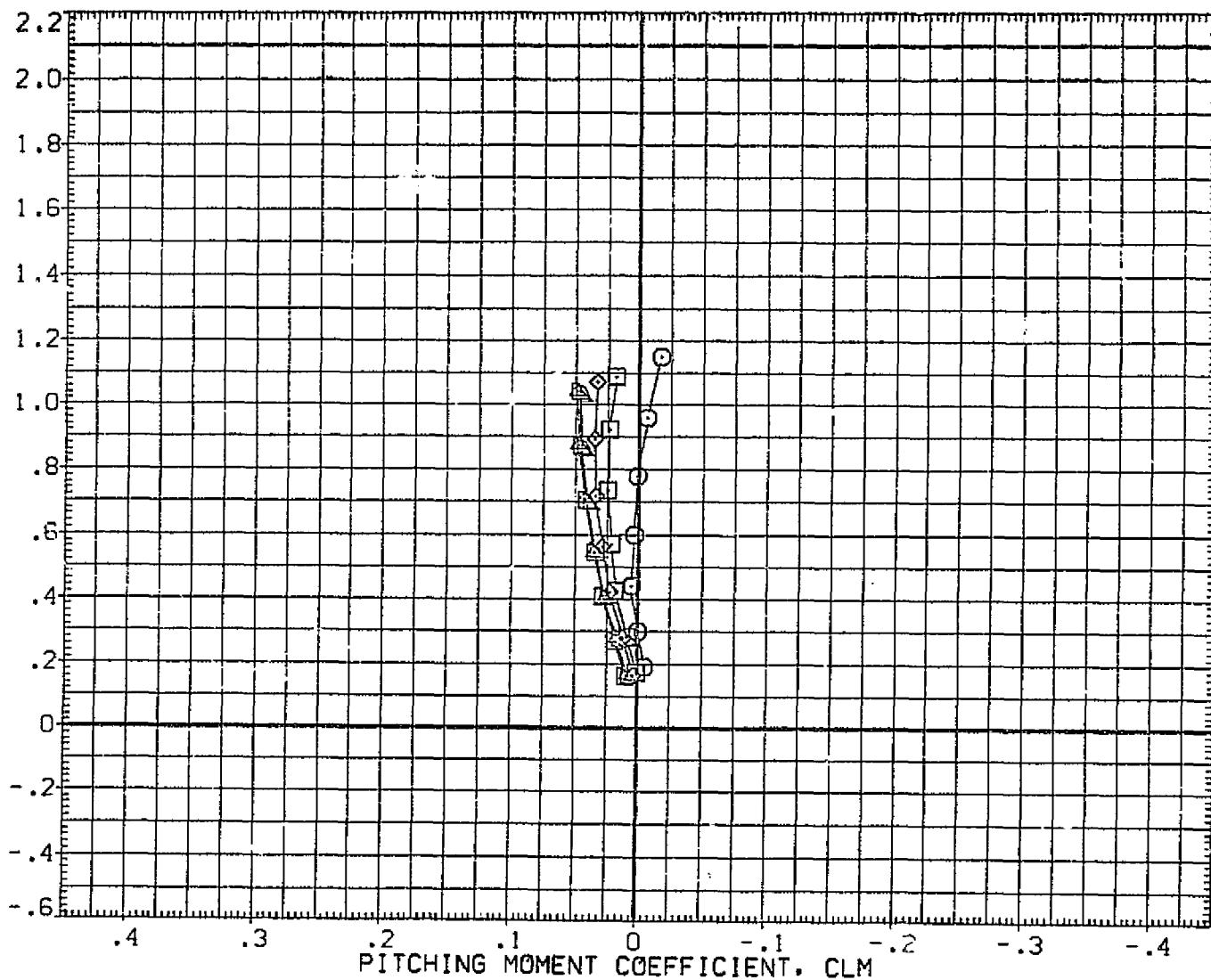
### EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(DQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(C)J022	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

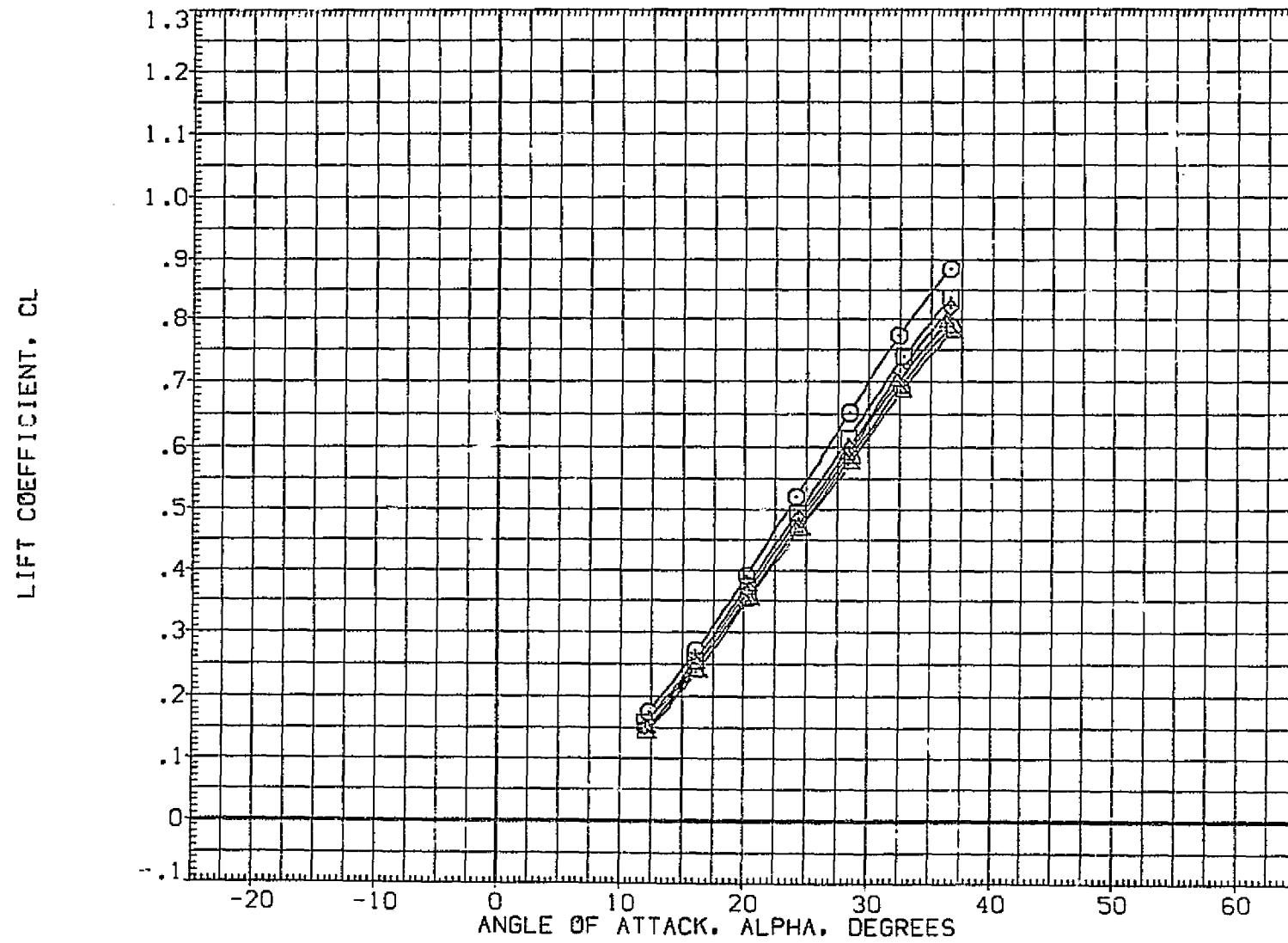
NORMAL FORCE COEFFICIENT. CN



### EFFECT OF NEGATIVE DEFLECTED ELEVONS

CADMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF	2690.0000	SD.FT.
(CQJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	CREF	474.8000	IN.
(CQJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF	936.7000	IN.
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP	1076.7000	IN. X0
(DQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP	.0000	IN. Y0
(CQJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP	375.0000	IN. Z0
						SCALE		
								.0100

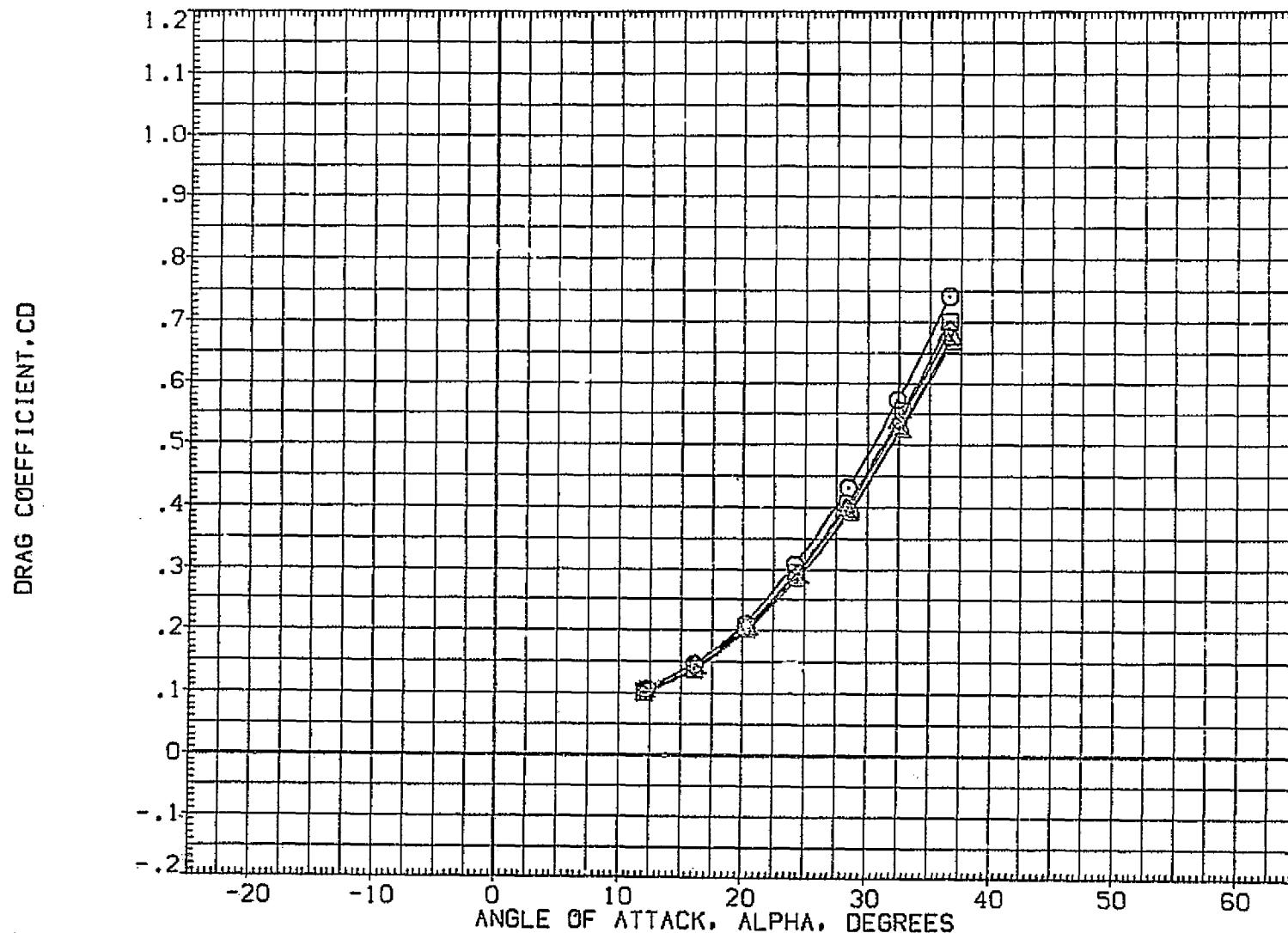


### EFFECT OF NEGATIVE DEFLECTED ELEVONS

$\text{MACH} = 10.33$

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 IN. FT.
(CQJ019)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(DQJ021)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

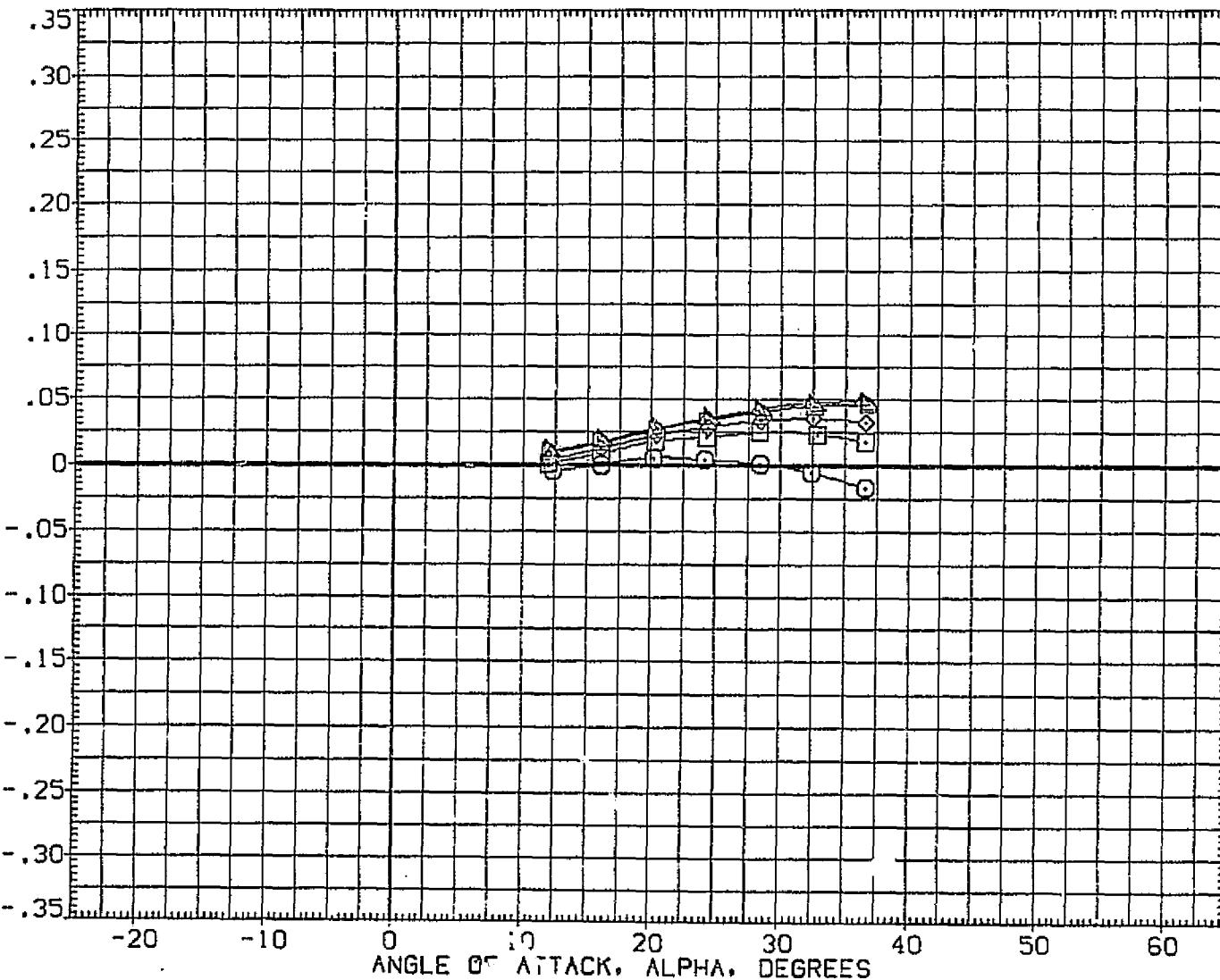


### EFFECT OF NEGATIVE DEFLECTED ELEVONS

CADMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
[CQJ011]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
[CQJ019]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
[CQJ020]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
[CQJ021]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.801	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
[DQJ021]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
[CQJ022]	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEAL	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

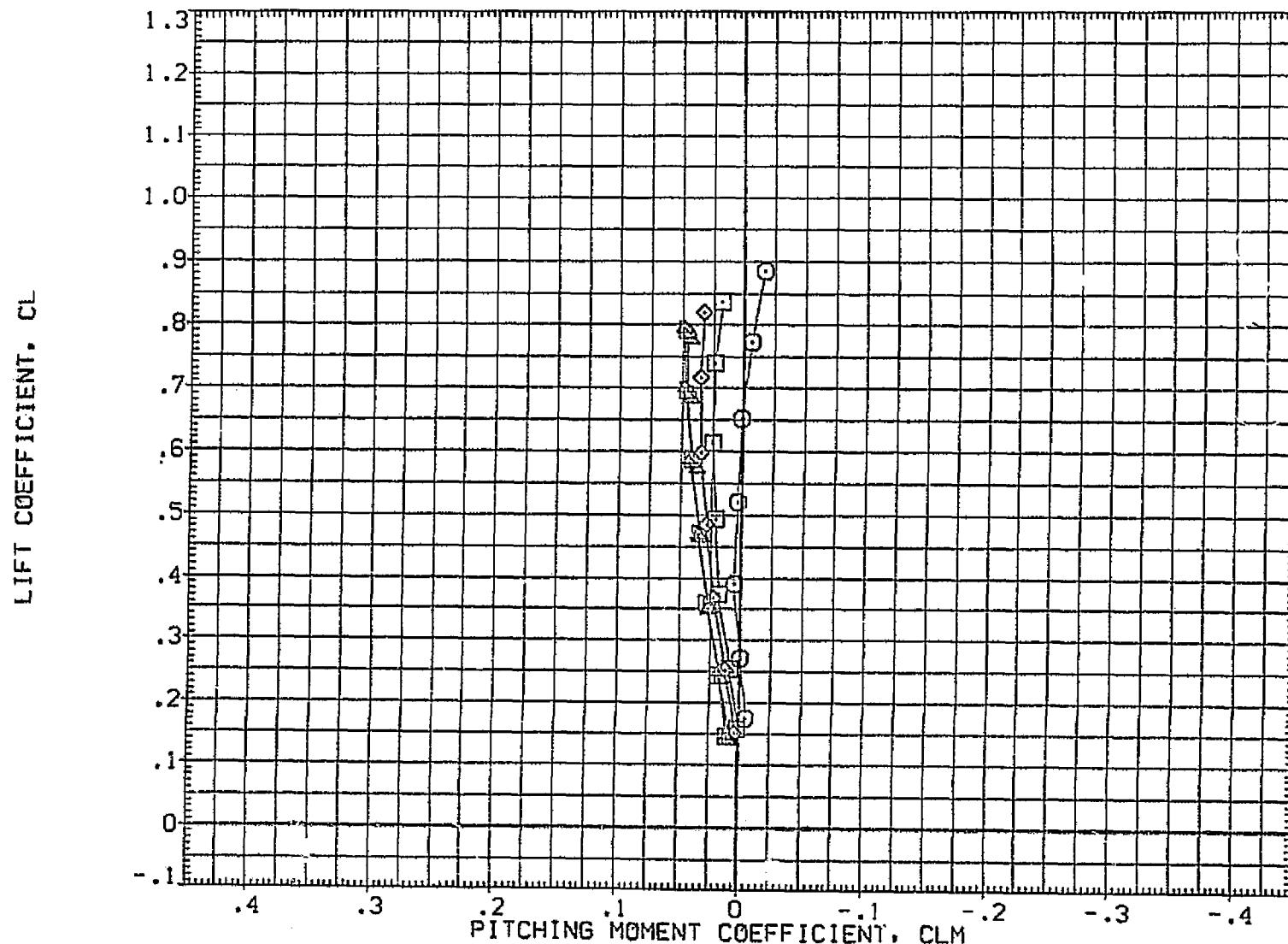


### EFFECT OF NEGATIVE DEFLECTED ELEVONS

CADMACH = 10.33

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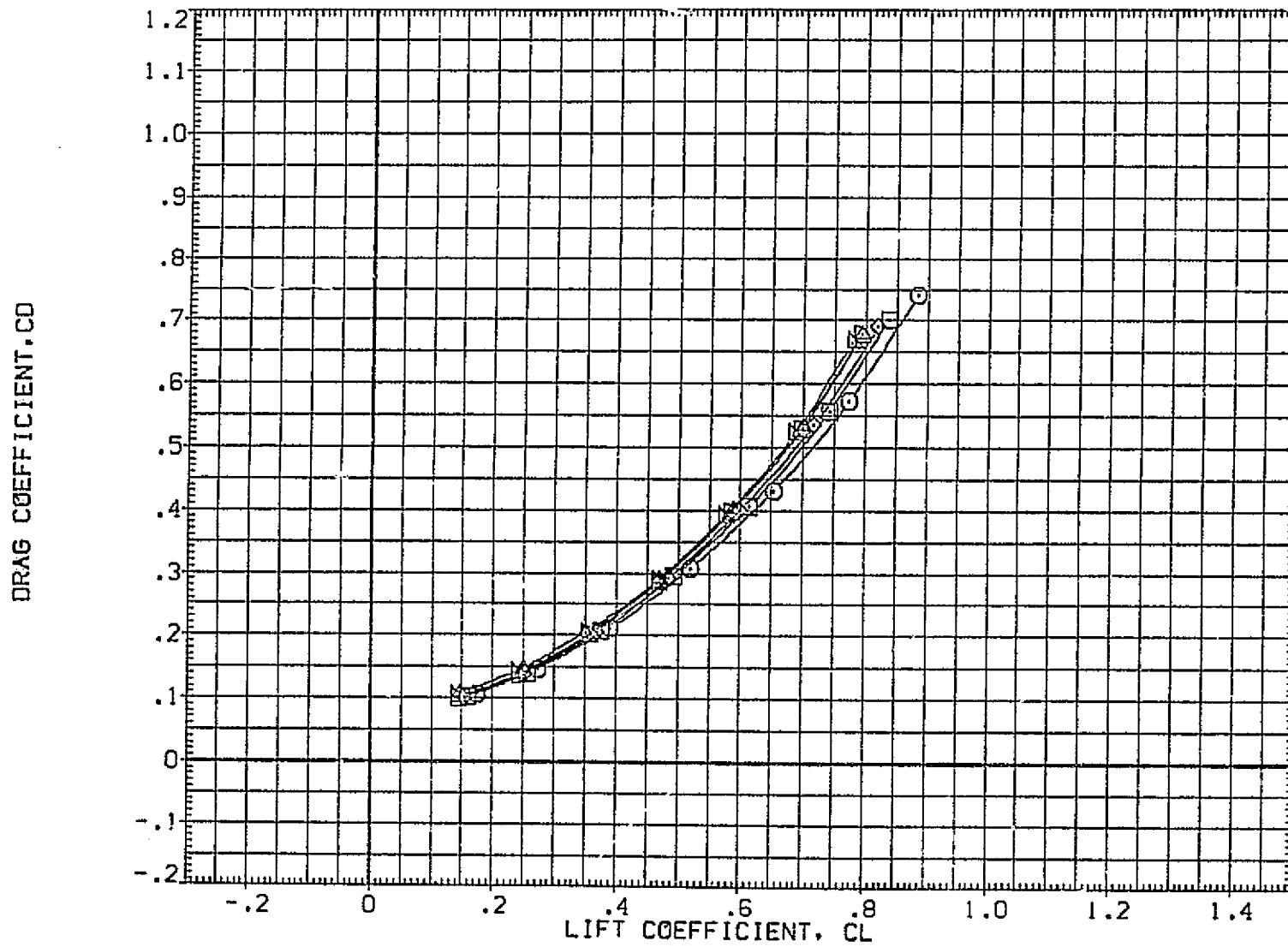
CATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ011)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ019)	□ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF 474.8000 IN.
(CQJ020)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF 936.7000 IN.
(CQJ021)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-40.000	XMRP 1076.7000 IN. X0
(CQJ021)	◇ OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP .0000 IN. Y0
(CQJ022)	D OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP 375.0000 IN. Z0
						SCALE .0100



EFFECT OF NEGATIVE DEFLECTED ELEVONS

CADMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ019)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF	474.6000 IN.
(CQJ020)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF	936.7000 IN.
(CQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP	1275.7000 IN. XG
(DQJ021)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP	.0000 IN. YG
(C7J022)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP	375.0000 IN. ZG
						SCALE	.0100



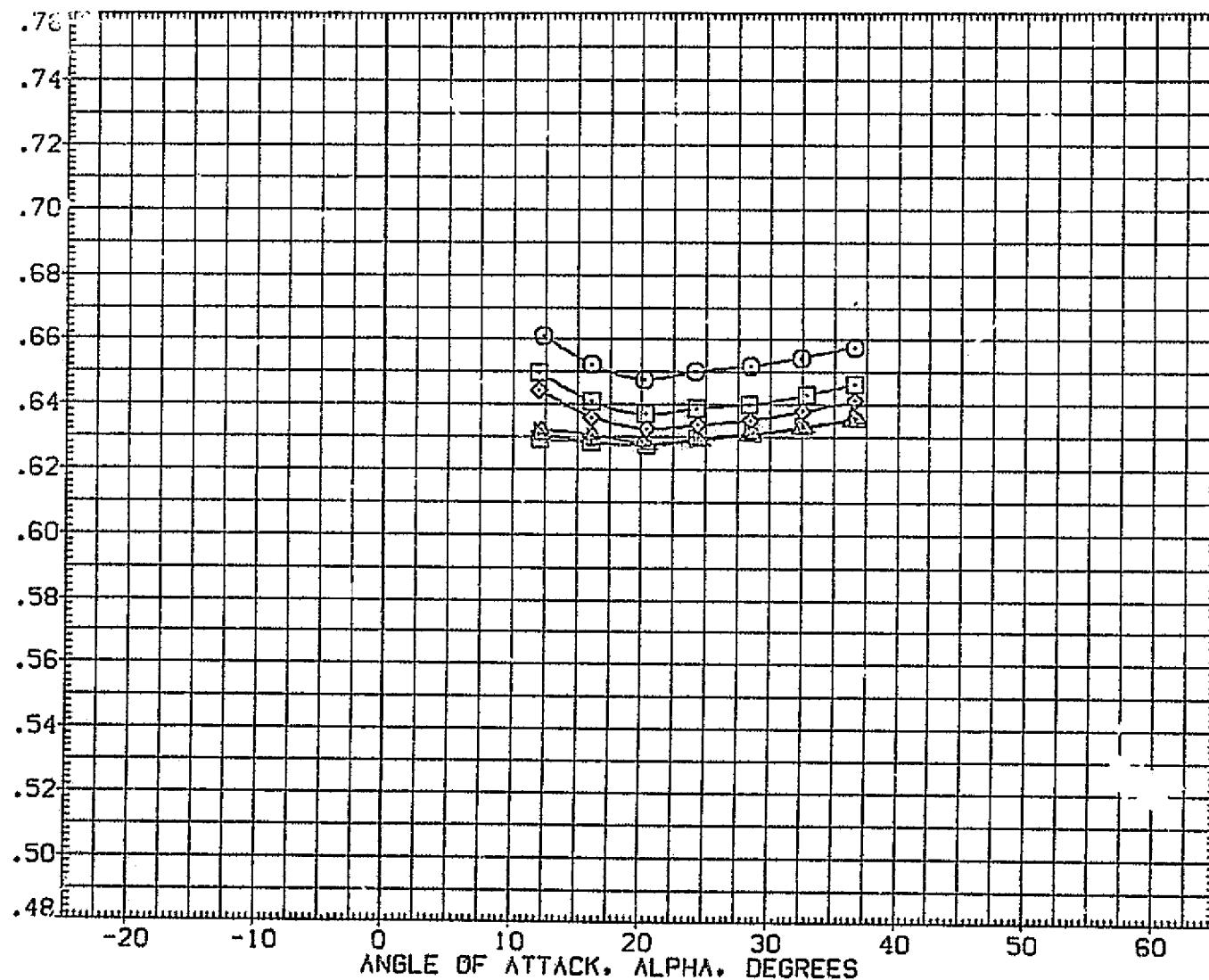
### EFFECT OF NEGATIVE DEFLECTED ELEVONS

(A)MACH = 10.33

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CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L

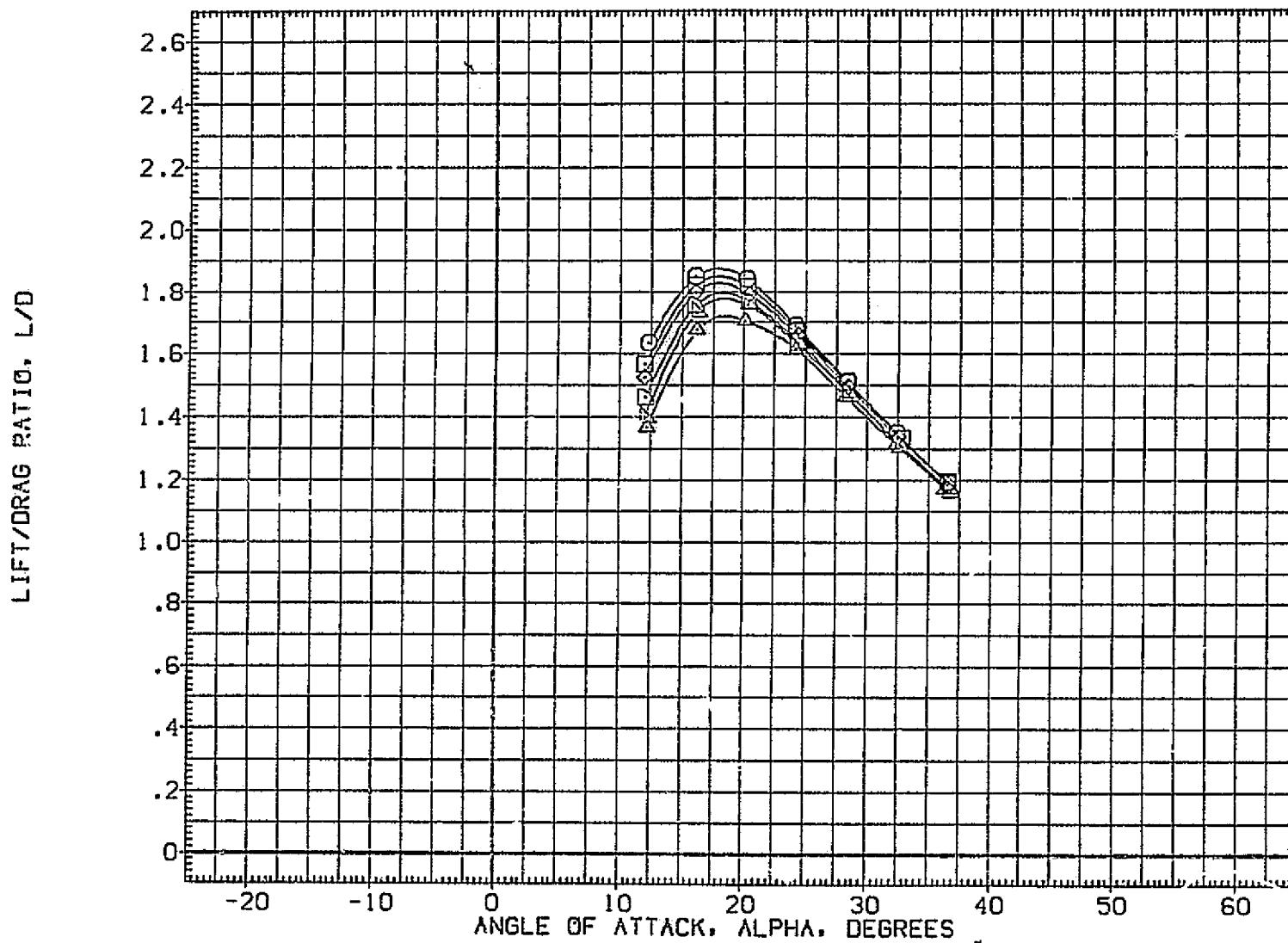
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFL/P	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ011)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ019)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF	474.8000 IN.
(CQJ020)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF	935.7000 IN.
(CQJ021)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP	1076.7000 IN. X0
(DJJ021)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP	.0000 IN. Y0
(CQJ022)	CA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPSEALED	1.235	-11.700	55.000	-40.000	ZMRP	375.0000 IN. Z0
						SCALE	.0100



EFFECT OF NEGATIVE DEFLECTED ELEVONS

MACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ011)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ019)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.963	-11.700	55.000	-10.000	LREF	474.8000 IN.
(CQJ020)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.991	-11.700	55.000	-20.000	BREF	936.7000 IN.
(CQJ021)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.601	-11.700	55.000	-40.000	XMRP	1076.7000 IN. X0
(DQJ021)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.987	-11.700	55.000	-40.000	YMRP	.0000 IN. Y0
(C7J022)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.235	-11.700	55.000	-40.000	ZMRP	375.0000 IN. Z0
						SCALE	.0100

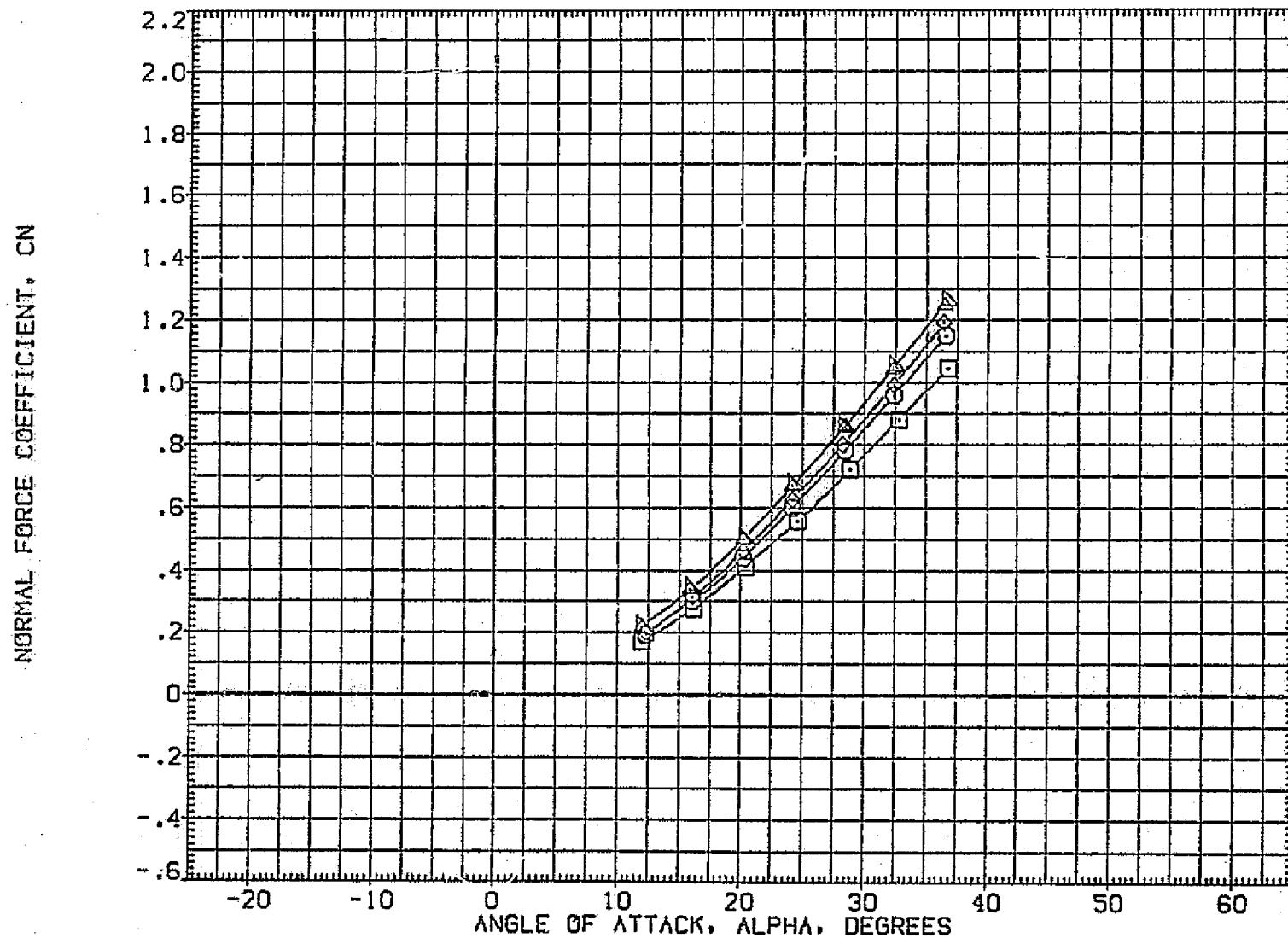


### EFFECT OF NEGATIVE DEFLECTED ELEVONS

C<sub>A</sub>MACH = 10.33

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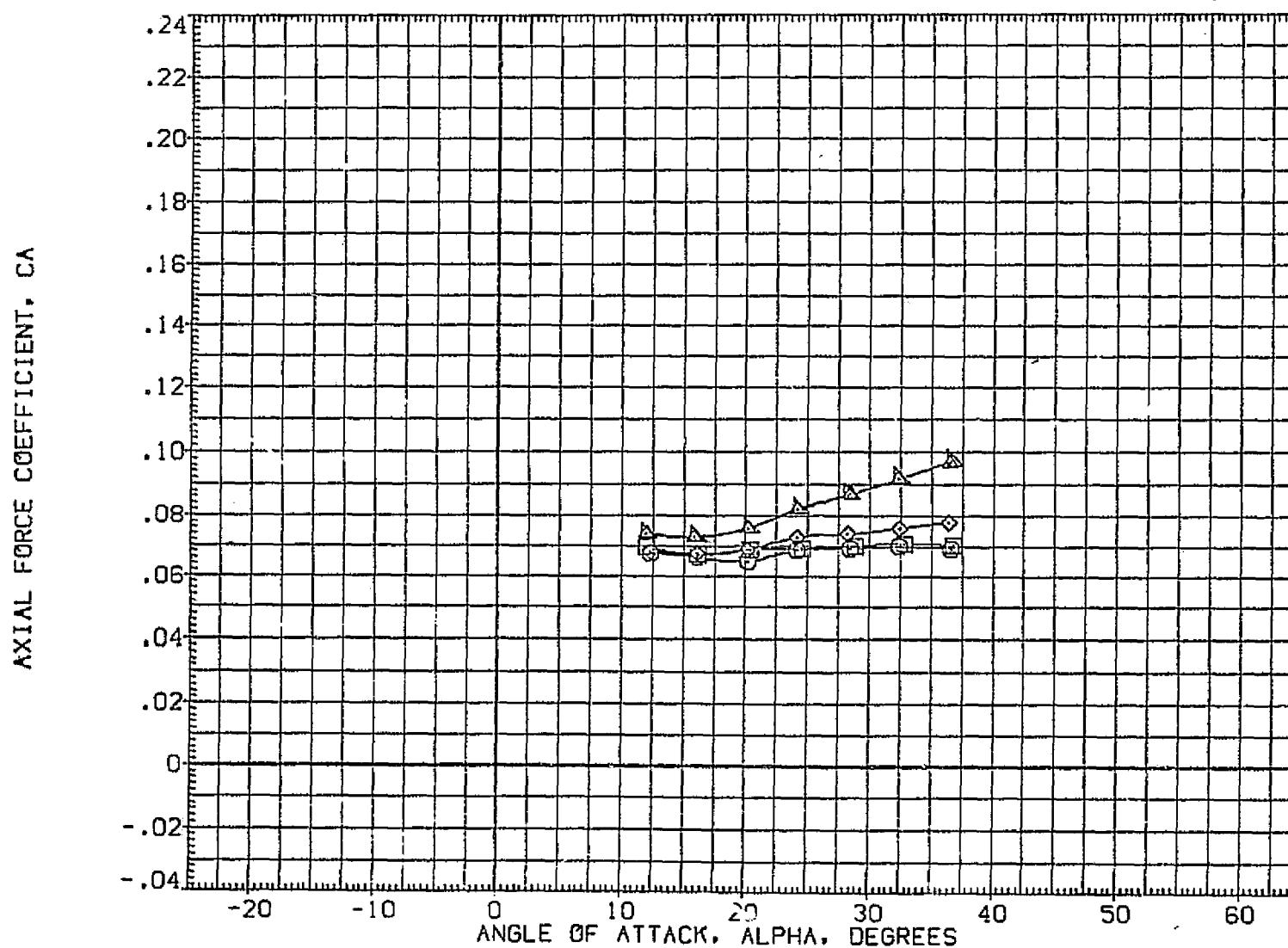
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF	2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF	474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF	936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP	1076.7000 IN. XG
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100



ELEVON EFFECTIVENESS AT -5 DEGREES BETA

CADMACH = 10.33

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE	INFORMATION	
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF	2690.0000	SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF	474.8000	IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.988	16.300	.000	.000	BREF	936.7000	IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP	1076.7000	IN. XG
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP	.0000	IN. YG
						ZMRP	375.0000	IN. ZG
						SCALE	.01,00	

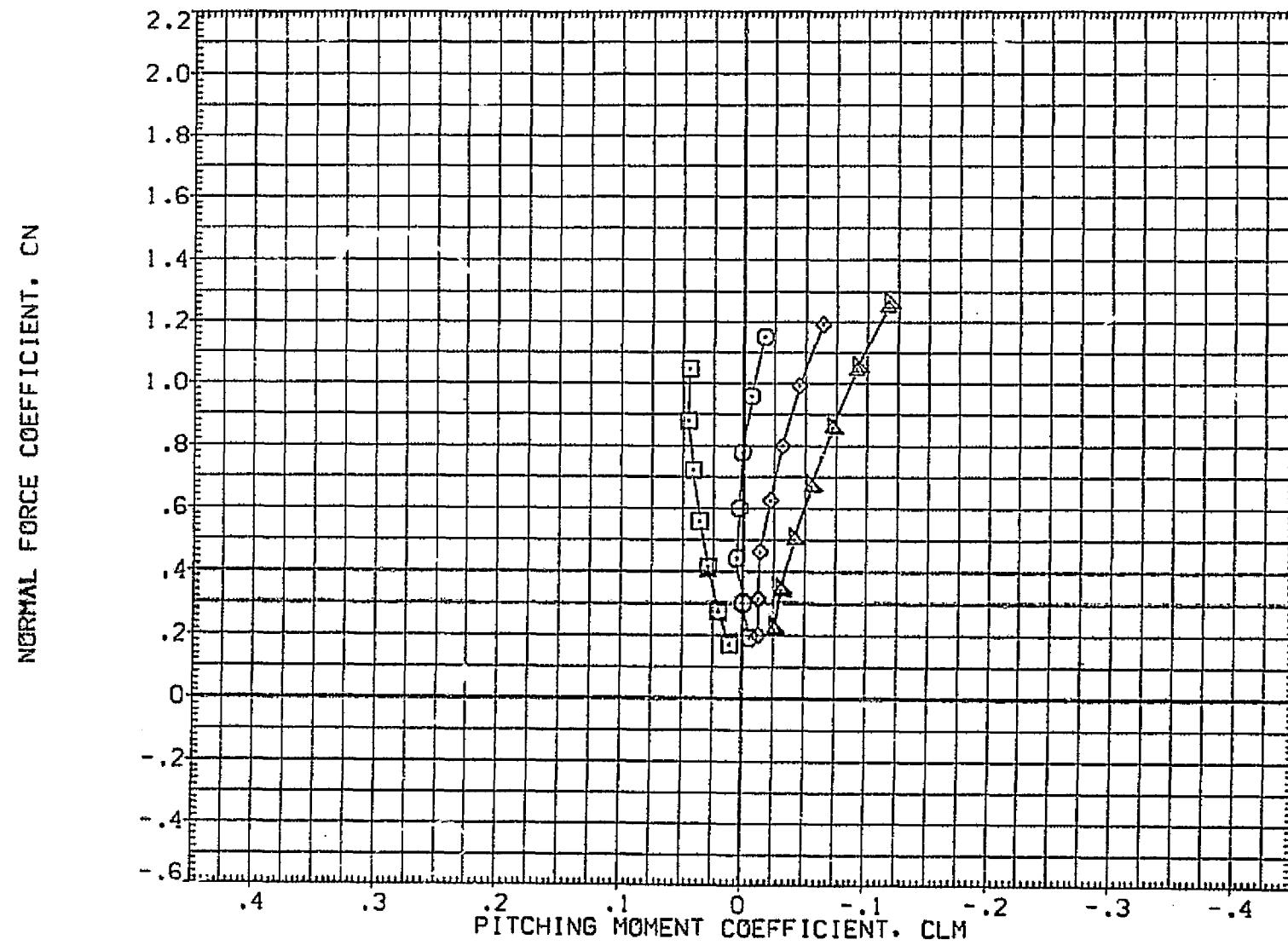


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

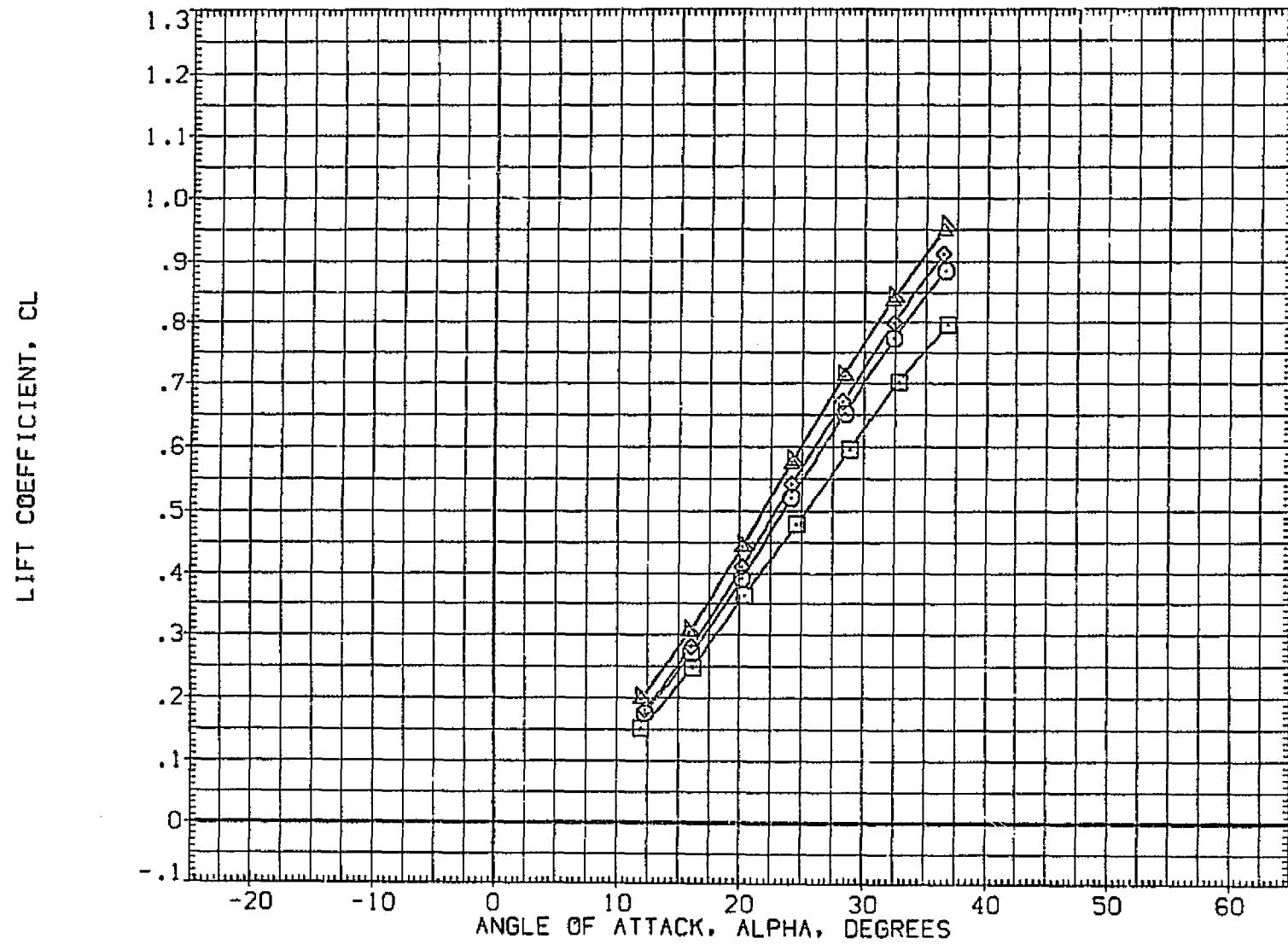


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(AO)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.218	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

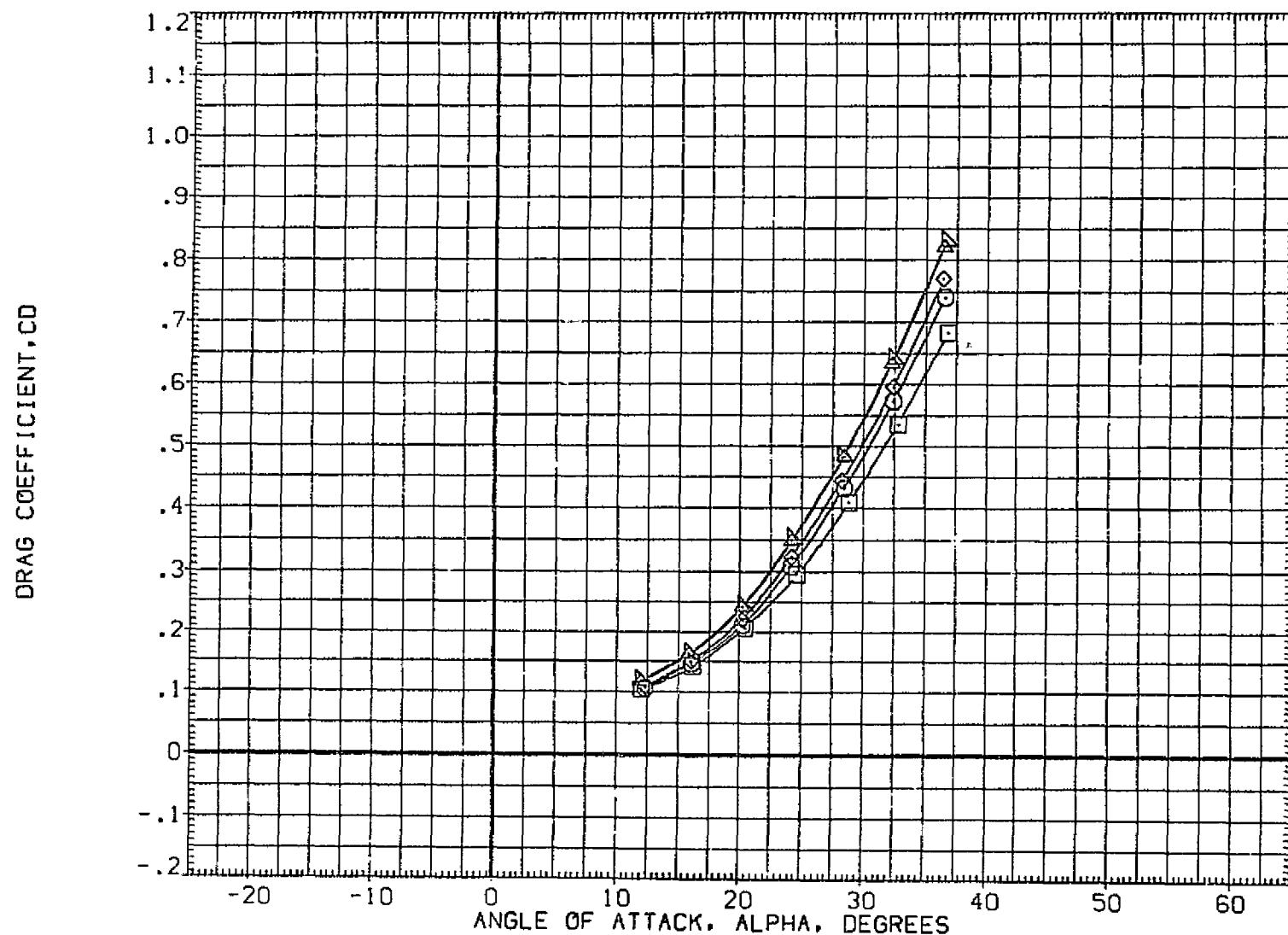


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	-.000	SREF	2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF	474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF	935.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

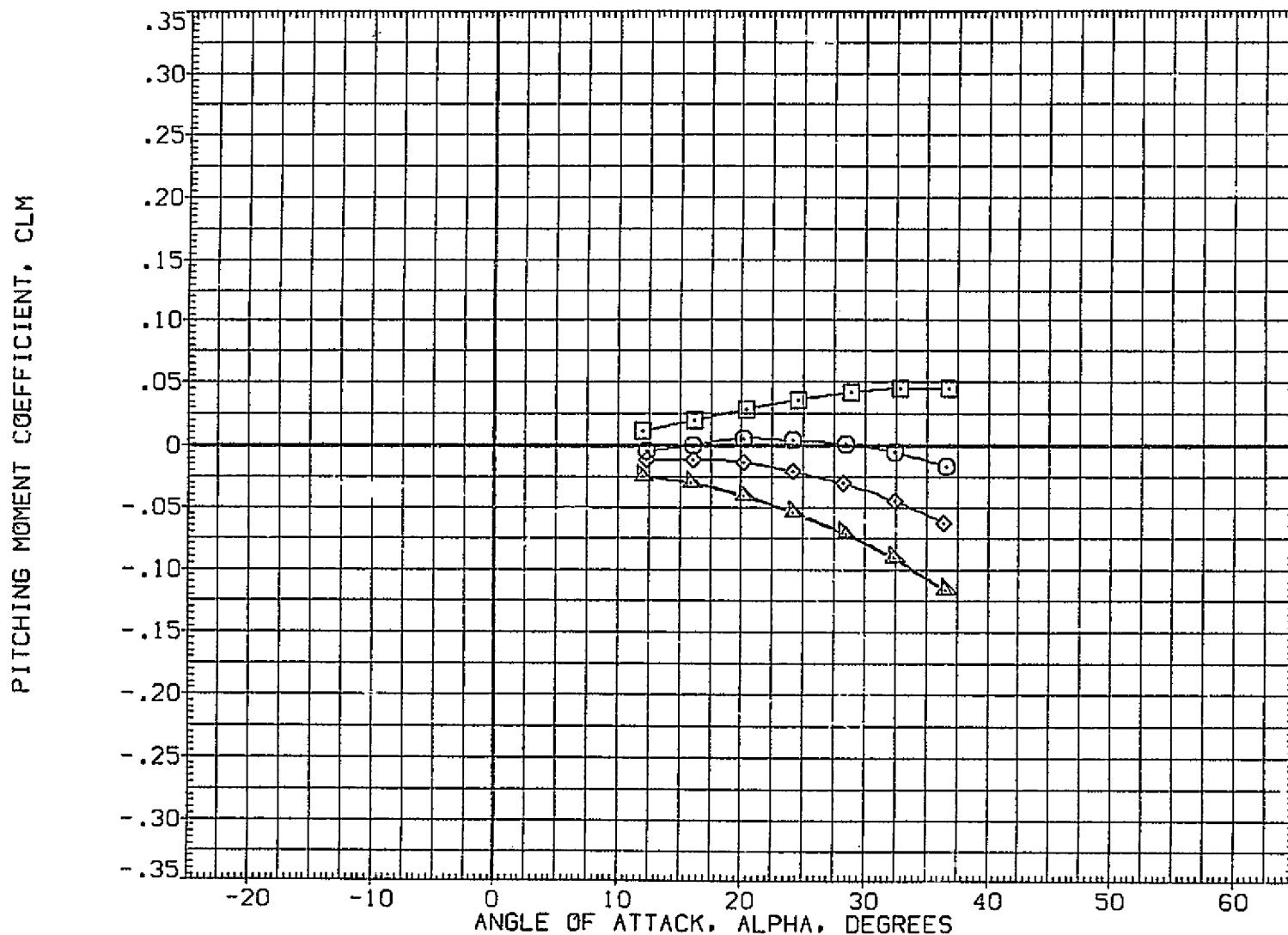


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

C-2

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF	2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.219	-11.700	-40.000	-5.000	LREF	474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.000	.000	BREF	936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	.960	16.300	10.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

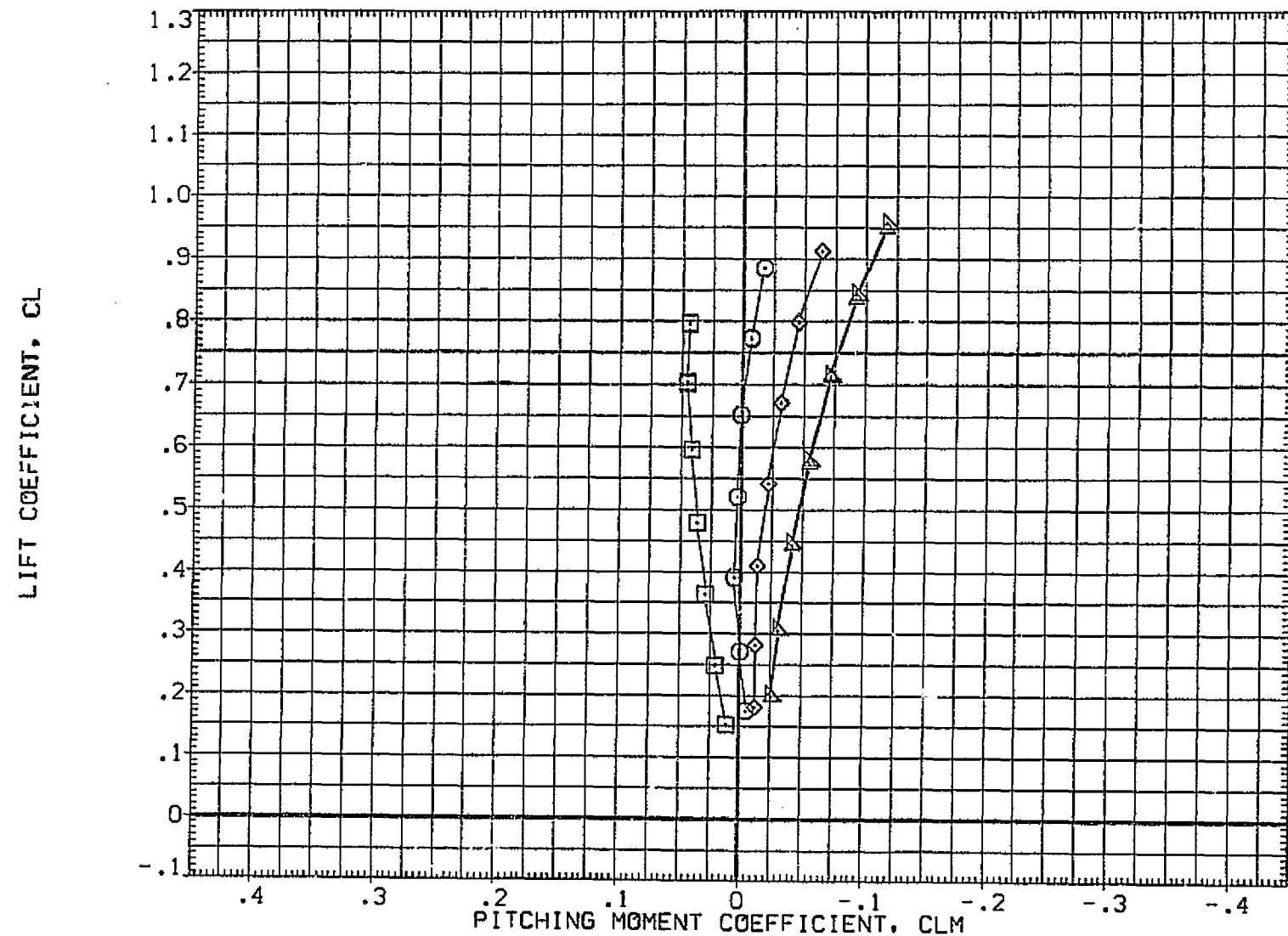


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	-40.000	-5.000	SREF 2690.0000 SQ.FT.
(CQJ029)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	10.000	0.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.950	16.300	10.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. Y0
					ZMRP 375.0000 IN. Z0	
					SCALE .0100	

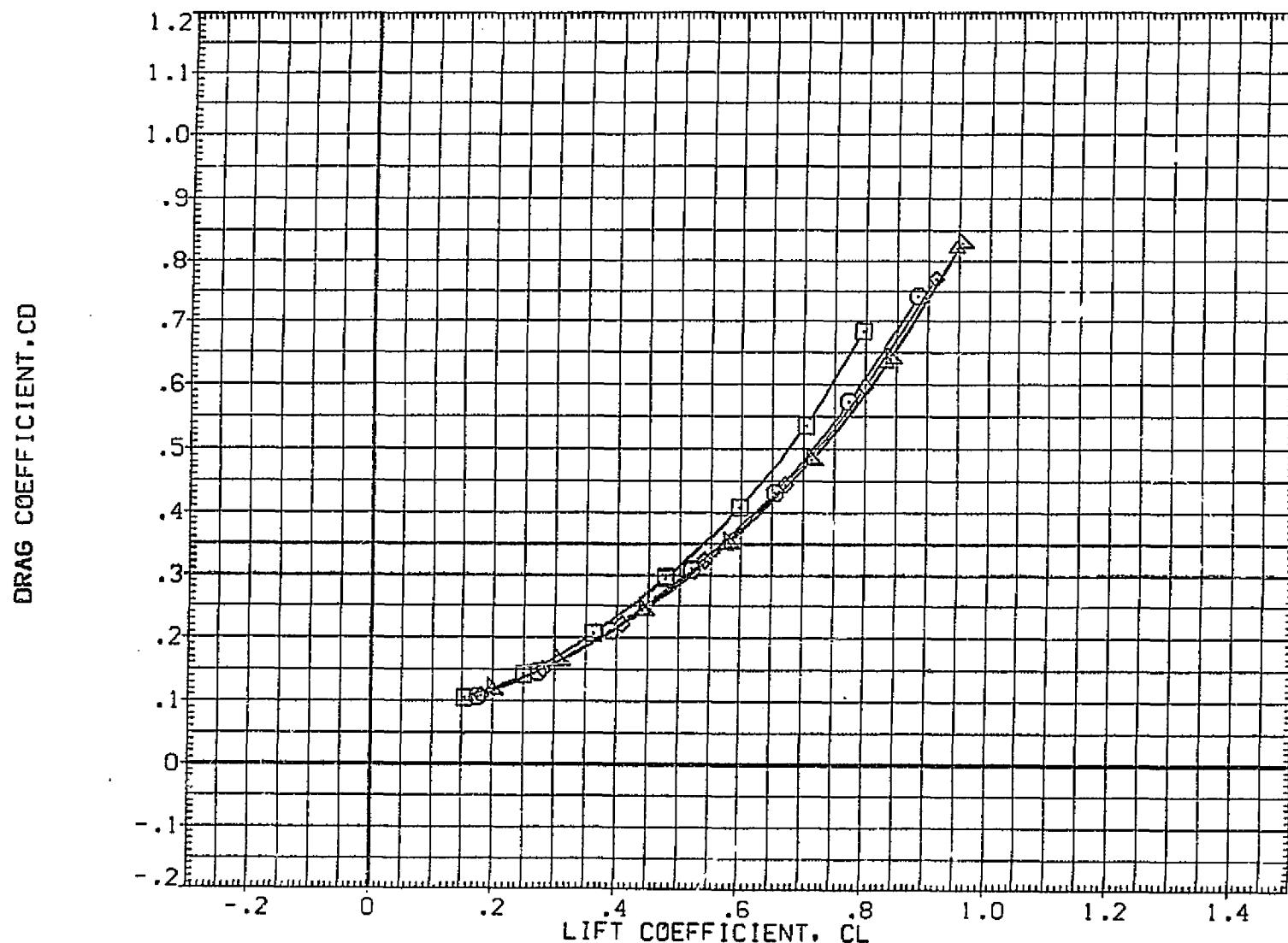


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(AO)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE	INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.000	.000	SREF	2690.0000 SD.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.9219	-11.700	-40.000	-5.000	LREF	474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.989	16.300	.000	.000	BREF	936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100



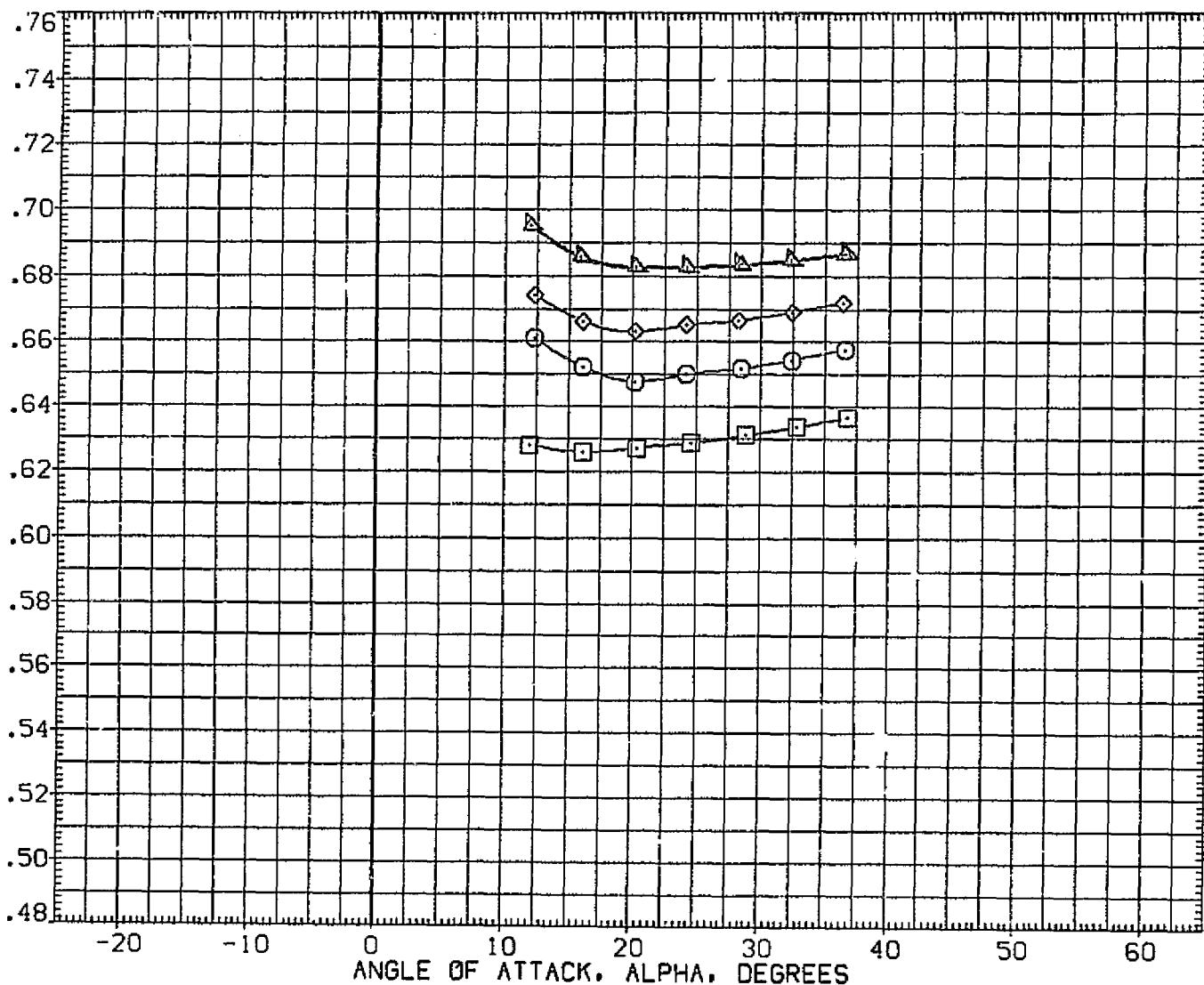
ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.33

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	-40.000	-5.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	10.000	-5.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. XG
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. YG
					ZMRP 375.0000 IN. ZG	
					SCALE .0100	

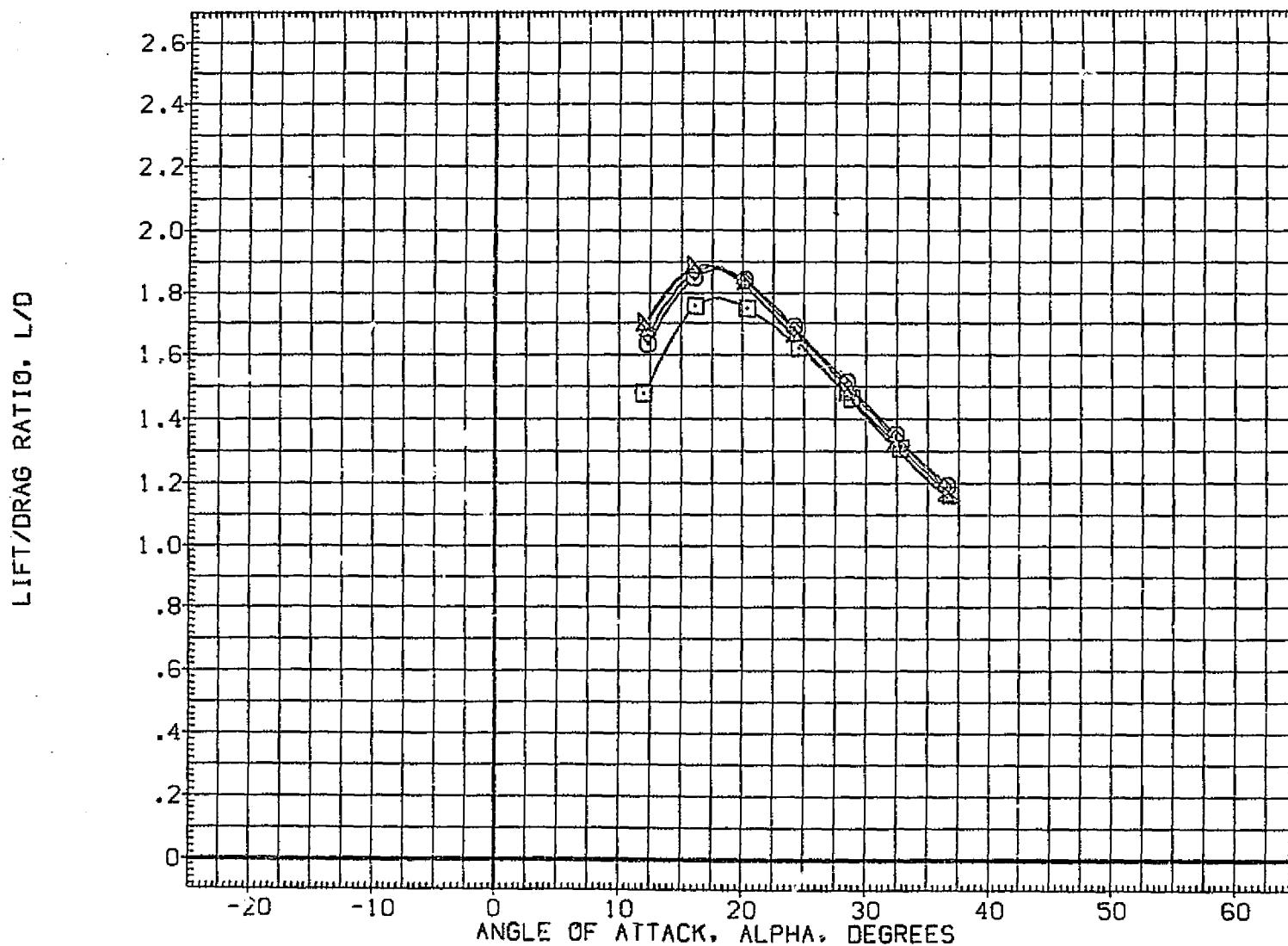
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH. XCP/L



ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.30

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	BETA	REFERENCE INFORMATION
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.948	-11.700	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ023)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	1.219	-11.700	-40.000	-5.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.989	16.300	.000	.000	BREF 936.7000 IN.
(CQJ014)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPSEALED	.960	16.300	10.000	-5.000	XMRP 1076.7000 IN. XG
(CQJ016)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	.953	16.300	10.000	-5.000	YMRP .0000 IN. YG
					ZMRP 375.0000 IN. ZD	
					SCALE .0100	

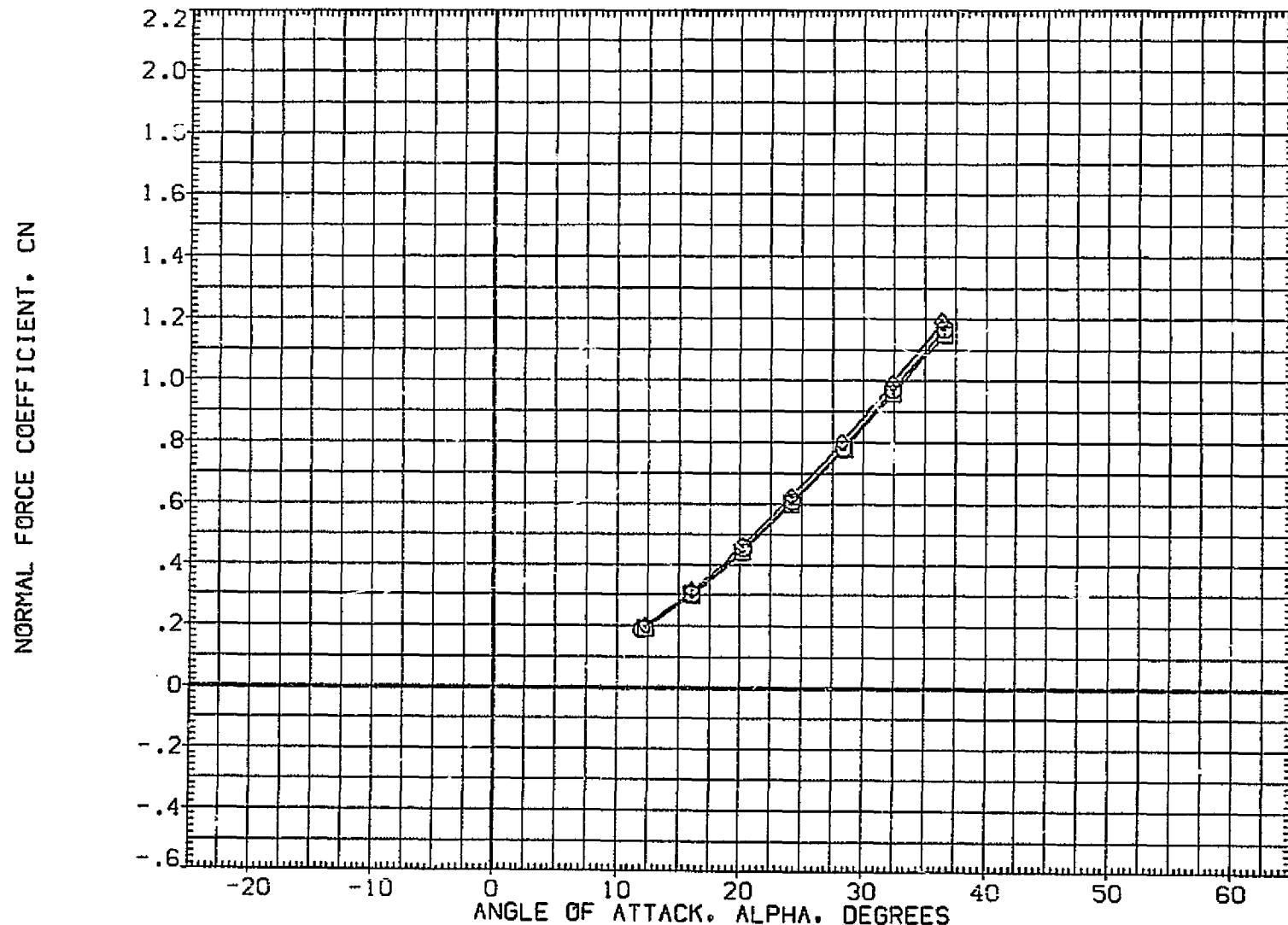


ELEVON EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH 10.33

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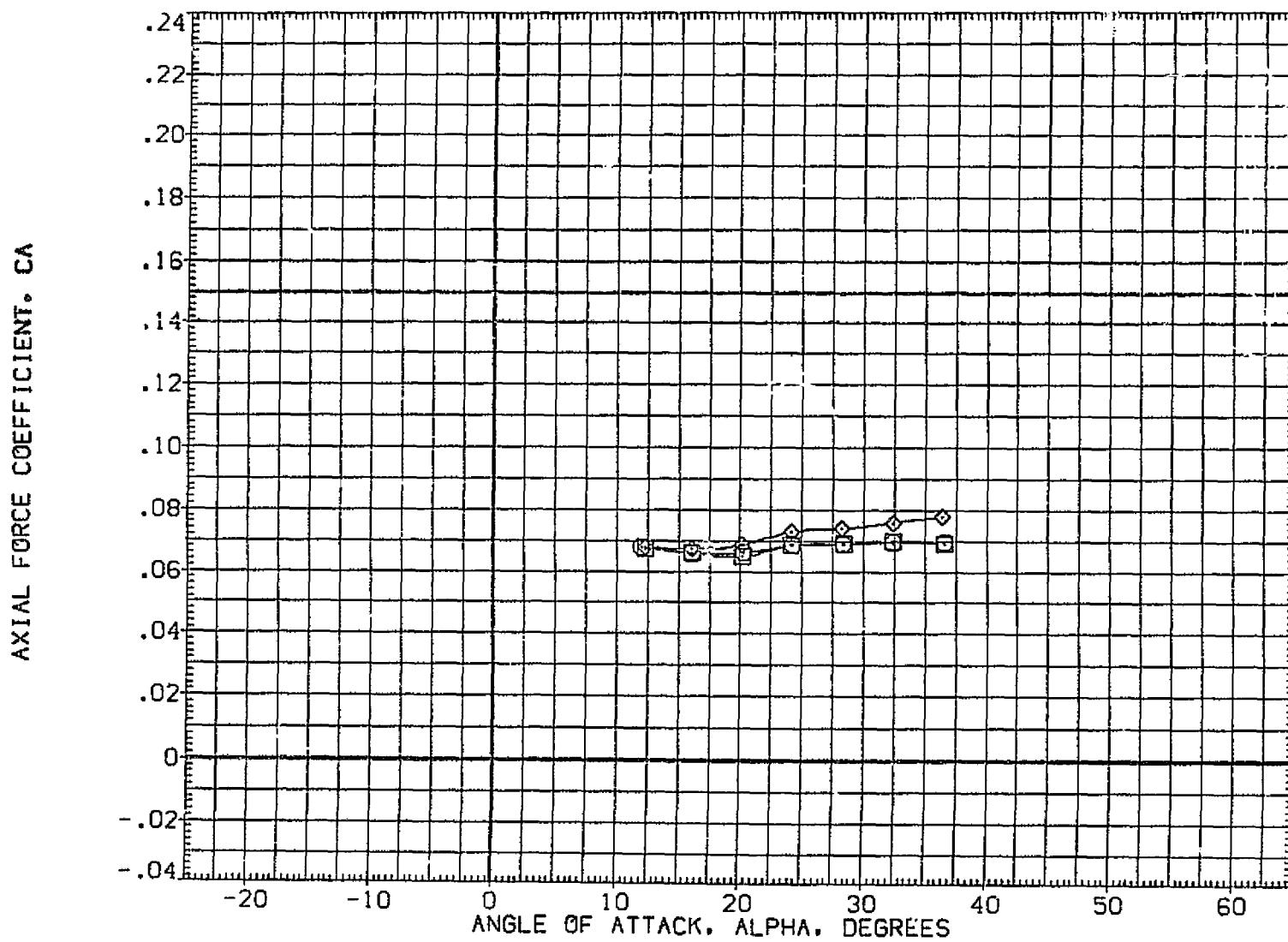
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DDJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



### BODY FLAP EFFECTIVENESS

(AO)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RNL	BDFLAP	SPO3RK	ELEVTR	REFERENCE INFORMATION
{CQJ001}	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	.000	SREF 2650.0000 SQ.FT.
{CQJ011}	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55,000	.000	LREF 174.8000 IN.
{CQJ012}	QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55,000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. XG
						YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100

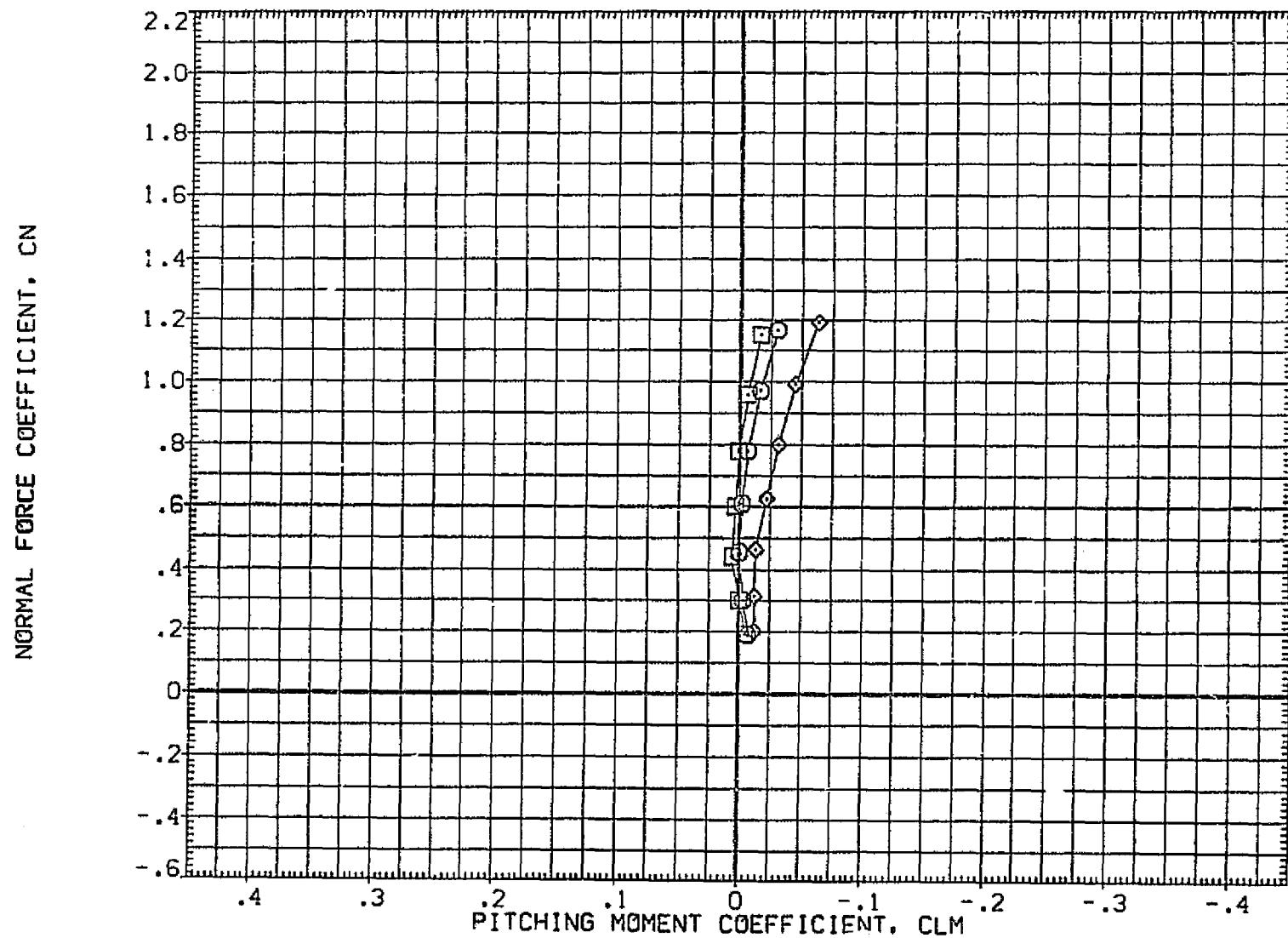


### BODY FLAP EFFECTIVENESS

CASMACH = 10.31

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DATA SET SYMBOL CONFIGURATION DESCRIPTION  
 (DQJ01) O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL RN/L .935 BDFLAP .000 SPDBRK .000 ELEVTR .000 REFERENCE INFORMATION  
 (CQJ011) O OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL .948 -11.700 .000 .000 SREF 2690.0000 SQ.FT.  
 (CQJ012) D OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL .989 16.300 .000 .000 LREF 474.8000 IN.  
 BREF 936.7000 IN. XG 1076.7000 IN. YG 375.0000 IN. ZG  
 XMPP .0000 IN. YG  
 ZMRP .0100



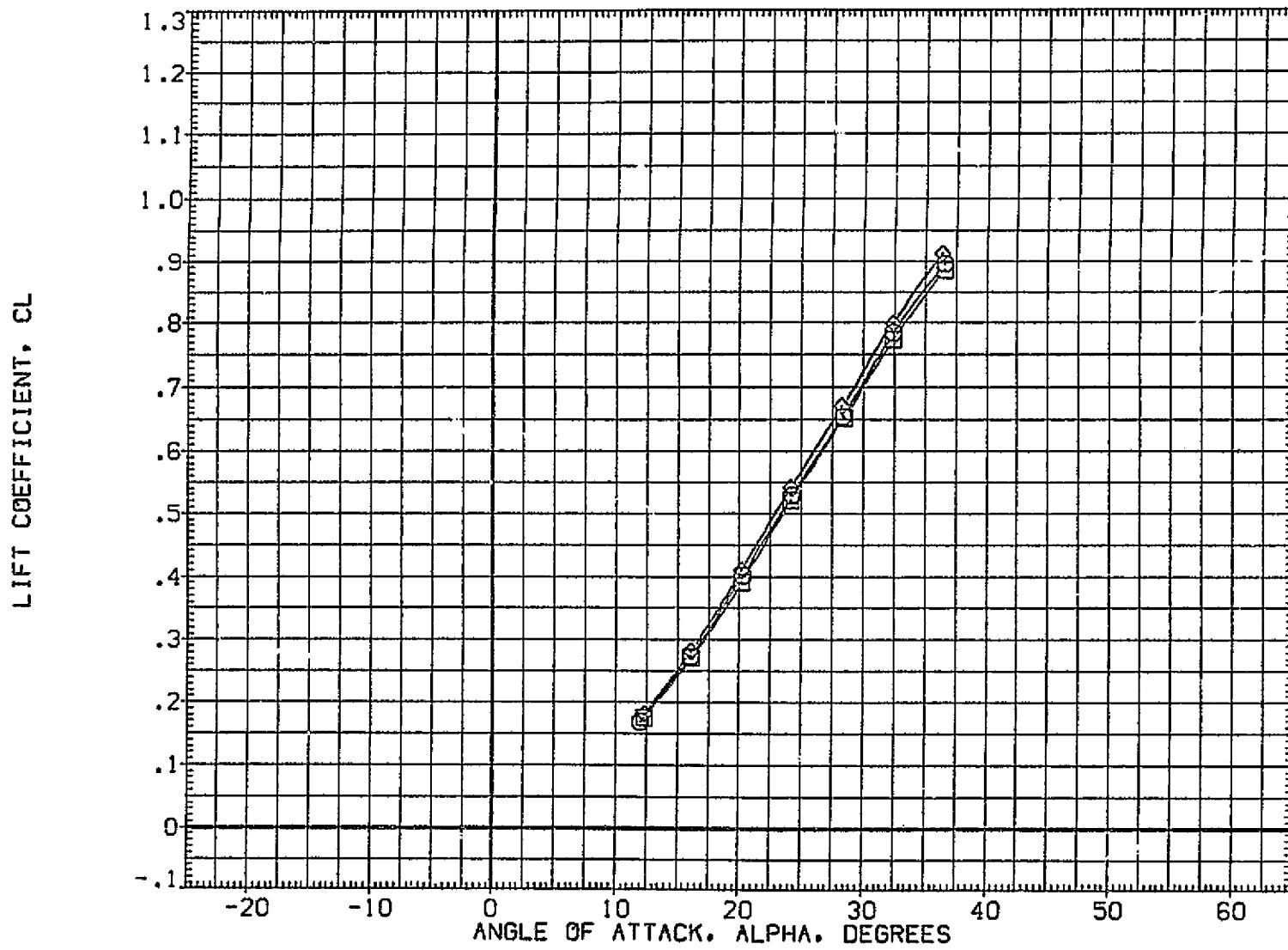
BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	.55.000	.000	LREF 474.8000 IN.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	.55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

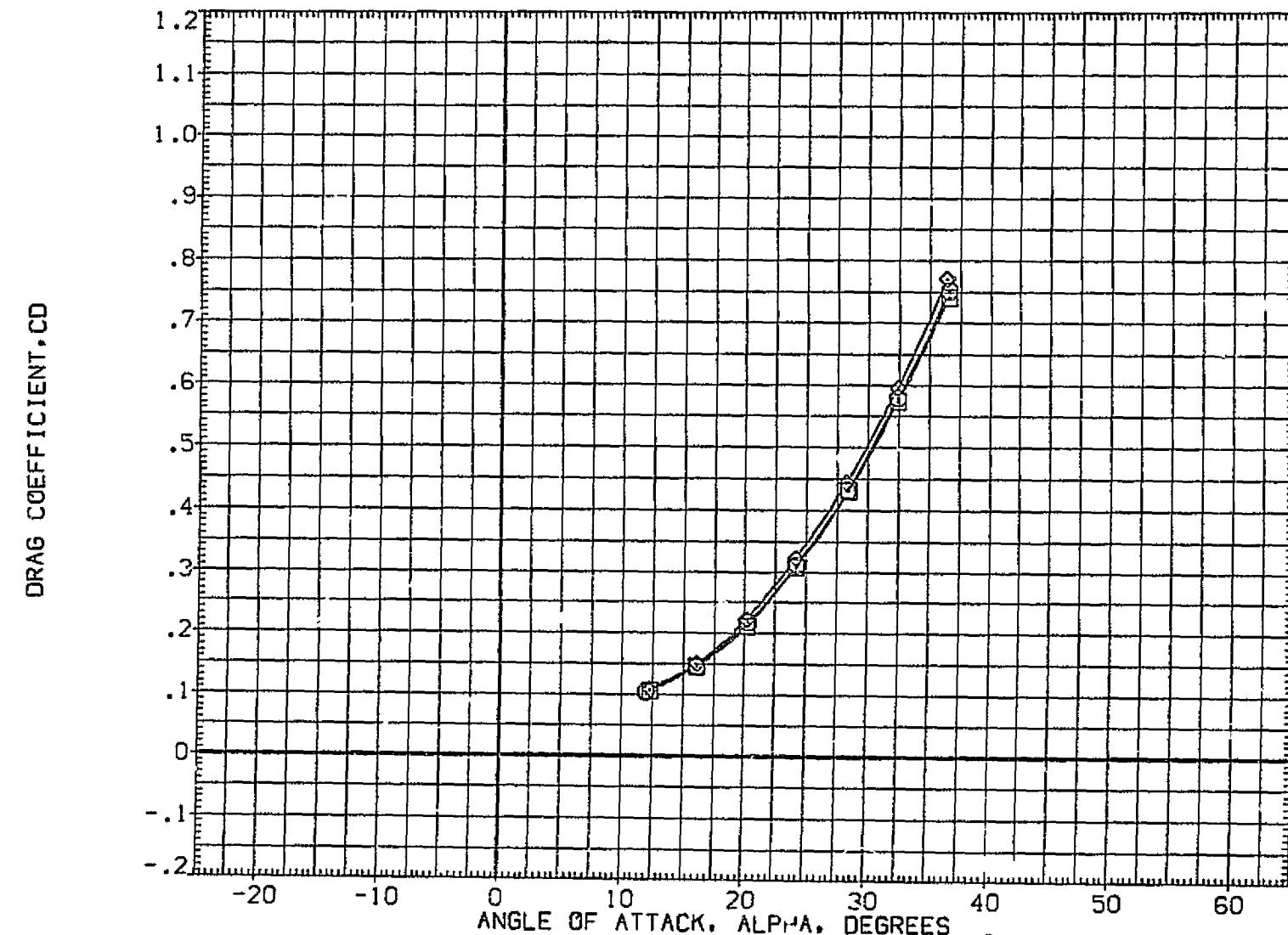


### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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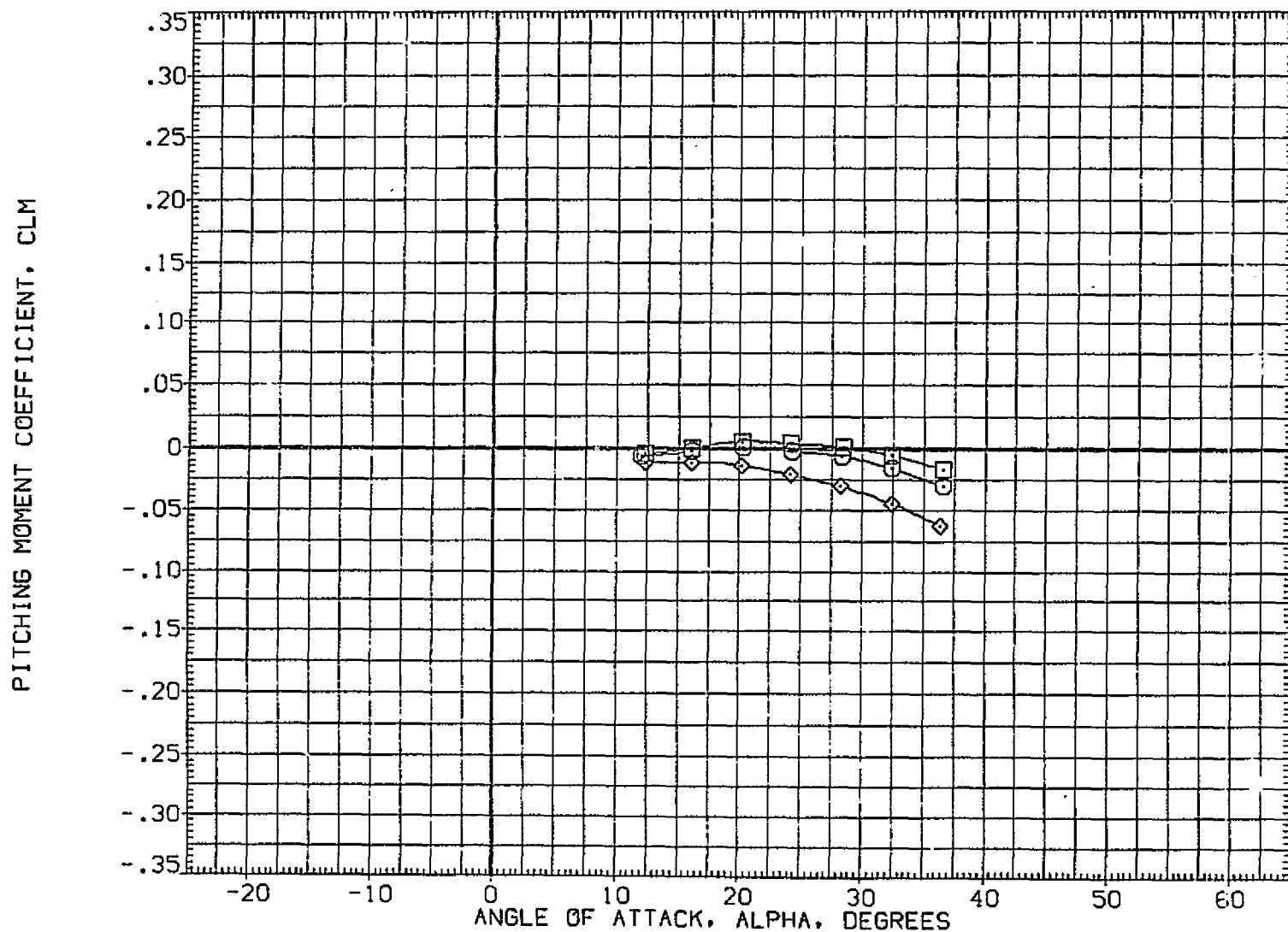
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RNL	BDFLAP	SPOBRK	ELEVTR	REFERENCE	INFORMATION
(DQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF	474.8000 IN.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF	936.7000 IN.
						XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100



### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPD9RK	ELEVTR	REFERENCE	INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ010)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF	474.8000 IN.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF	936.7000 IN.
						XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

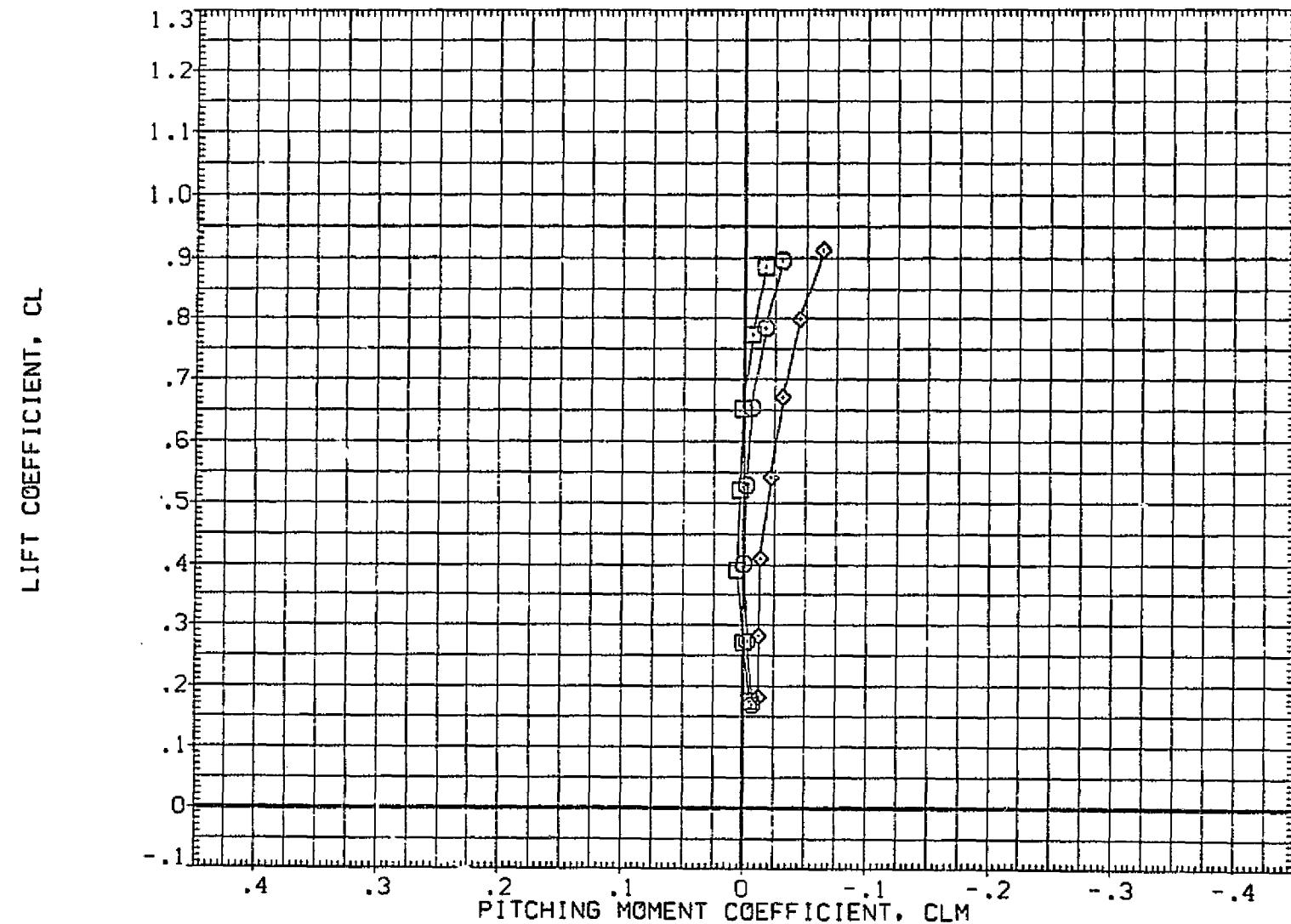


### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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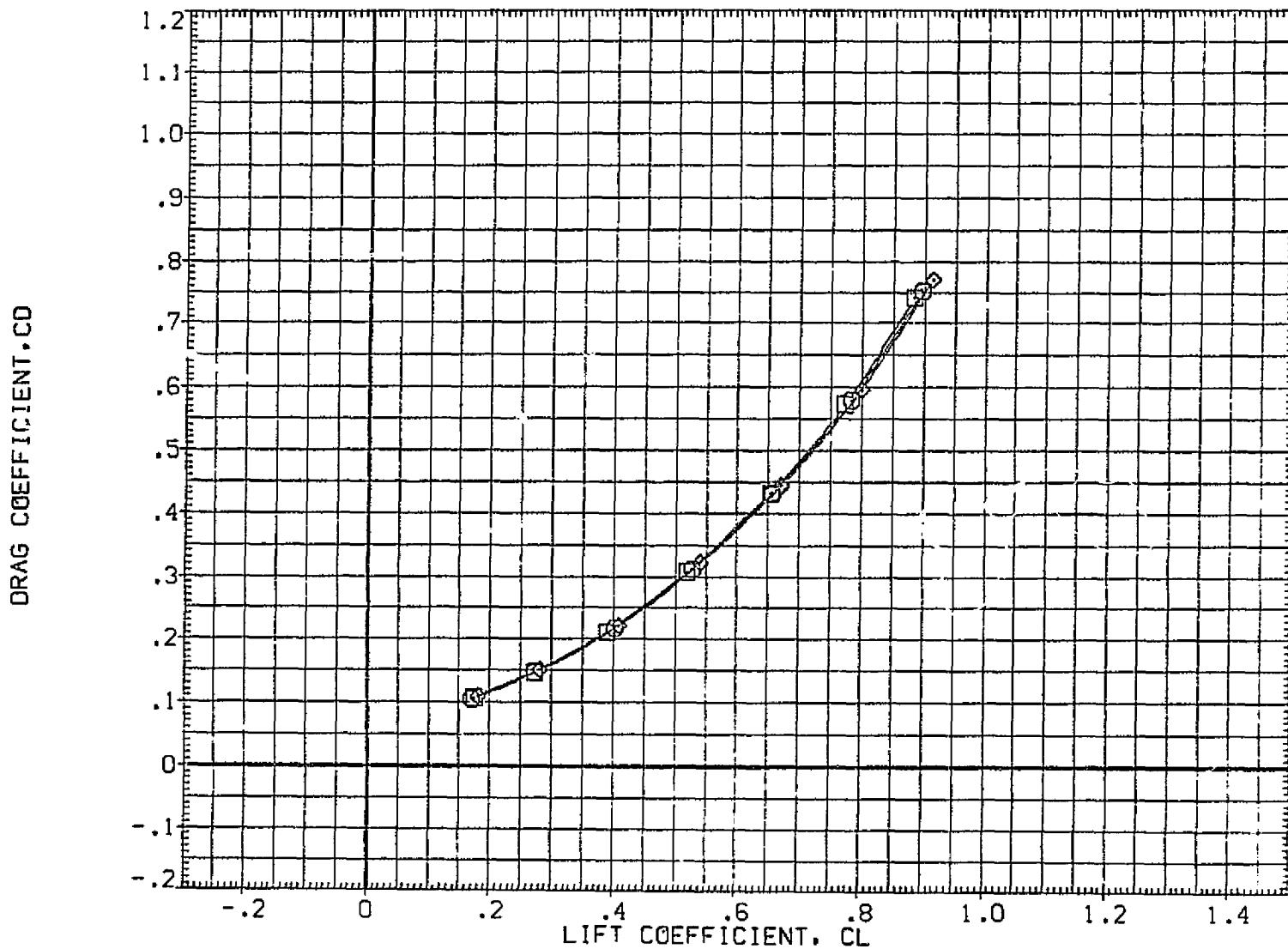
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	R/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	DA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	DA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	DA-90 CFHT-110 R1-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
(DQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000	50. FT.
(CQJ011)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55.000	.000	LREF	474.8000	IN.
(CQJ012)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.989	16.300	55.000	.000	BREF	936.7000	IN.
						XMRP	1076.7000	IN. XG
						YMRP	.0000	IN. YG
						ZMRP	375.0000	IN. ZG
						SCALE	.0133	

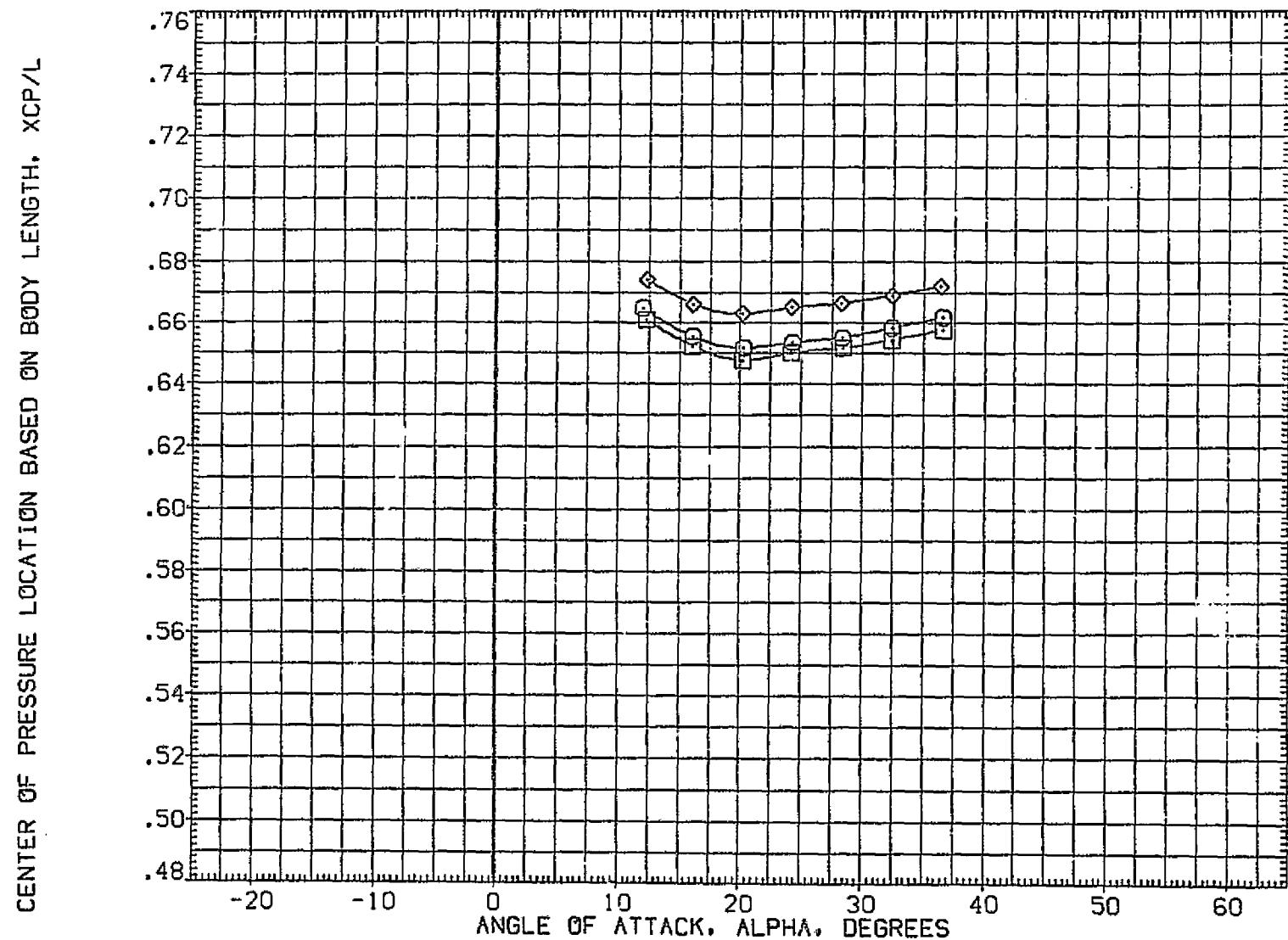


### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	:935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ011)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	:948	-11.700	55.000	.000	LREF 474.8000 IN.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 ØTRGAPUNSEAL	:989	16.300	55.000	.000	BREF 936.7000 IN.
						XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

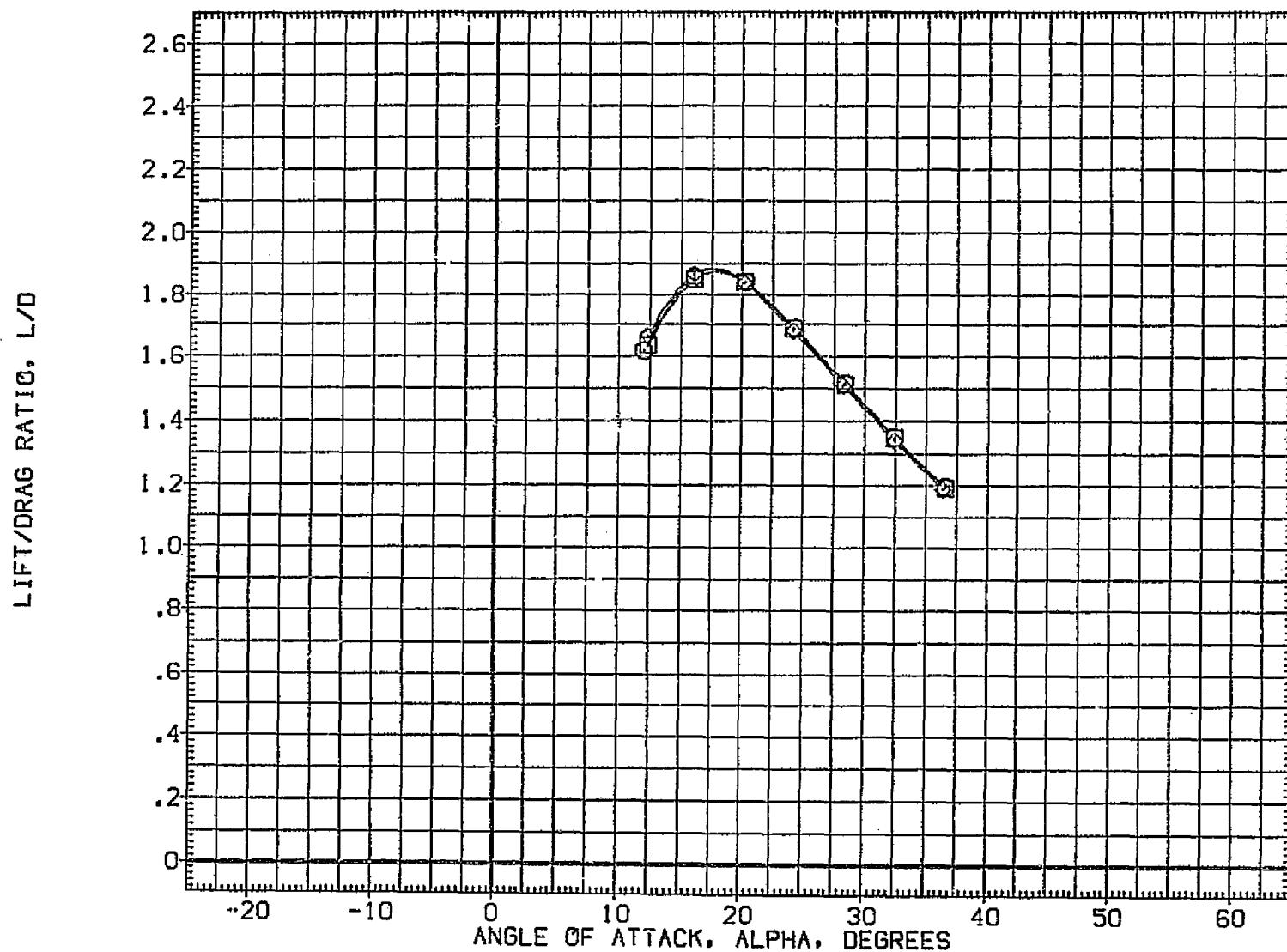


BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	.000	SREF 2690.0000 SQ.FT.
(CQJ012)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.948	-11.700	55,000	.000	LREF 474.8000 IN.
		.989	16.300	55,000	.000	BREF 935.7000 IN.
						XMRP 1076.7000 IN.
						YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100

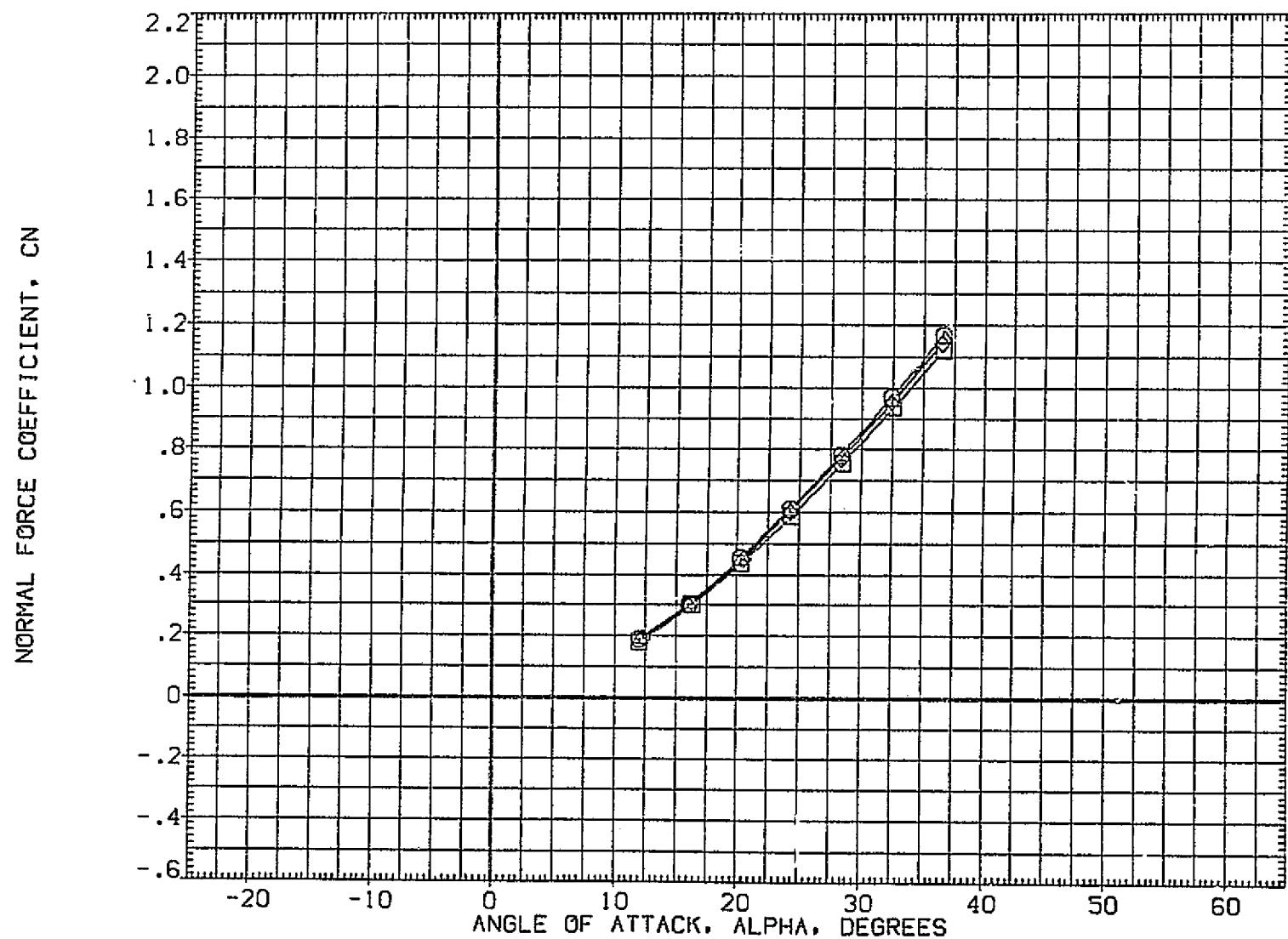


### BODY FLAP EFFECTIVENESS

(A)MACH = 10.31

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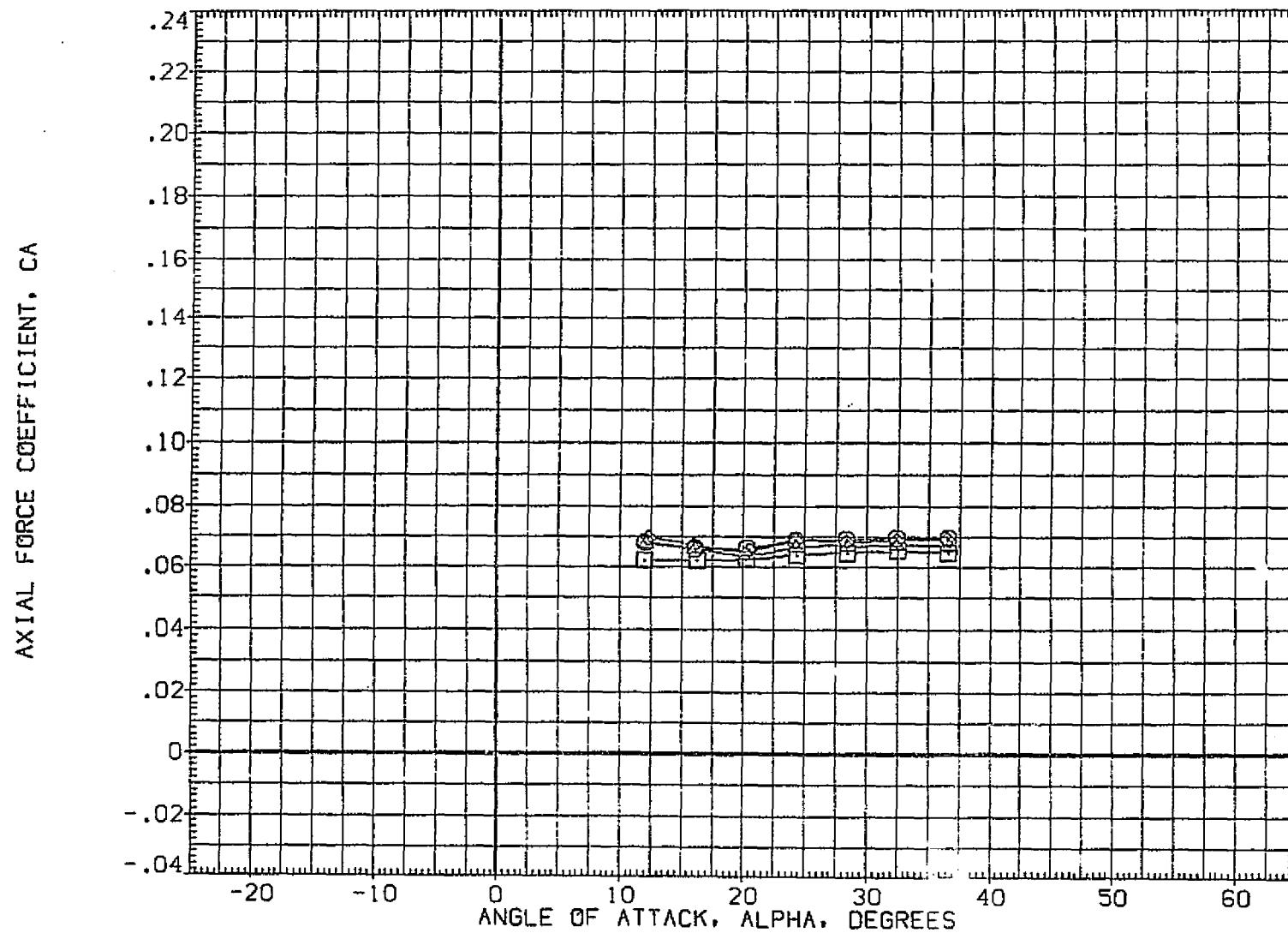
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
( CQJ001 )	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
( CQJ003 )	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
( CQJ007 )	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
( CQJ009 )	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



SPEED BRAKE EFFECTIVENESS

C<sub>A</sub>MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	SDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BRCF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0
						ZMRP .0000 IN. Y0
						SCALE .0100

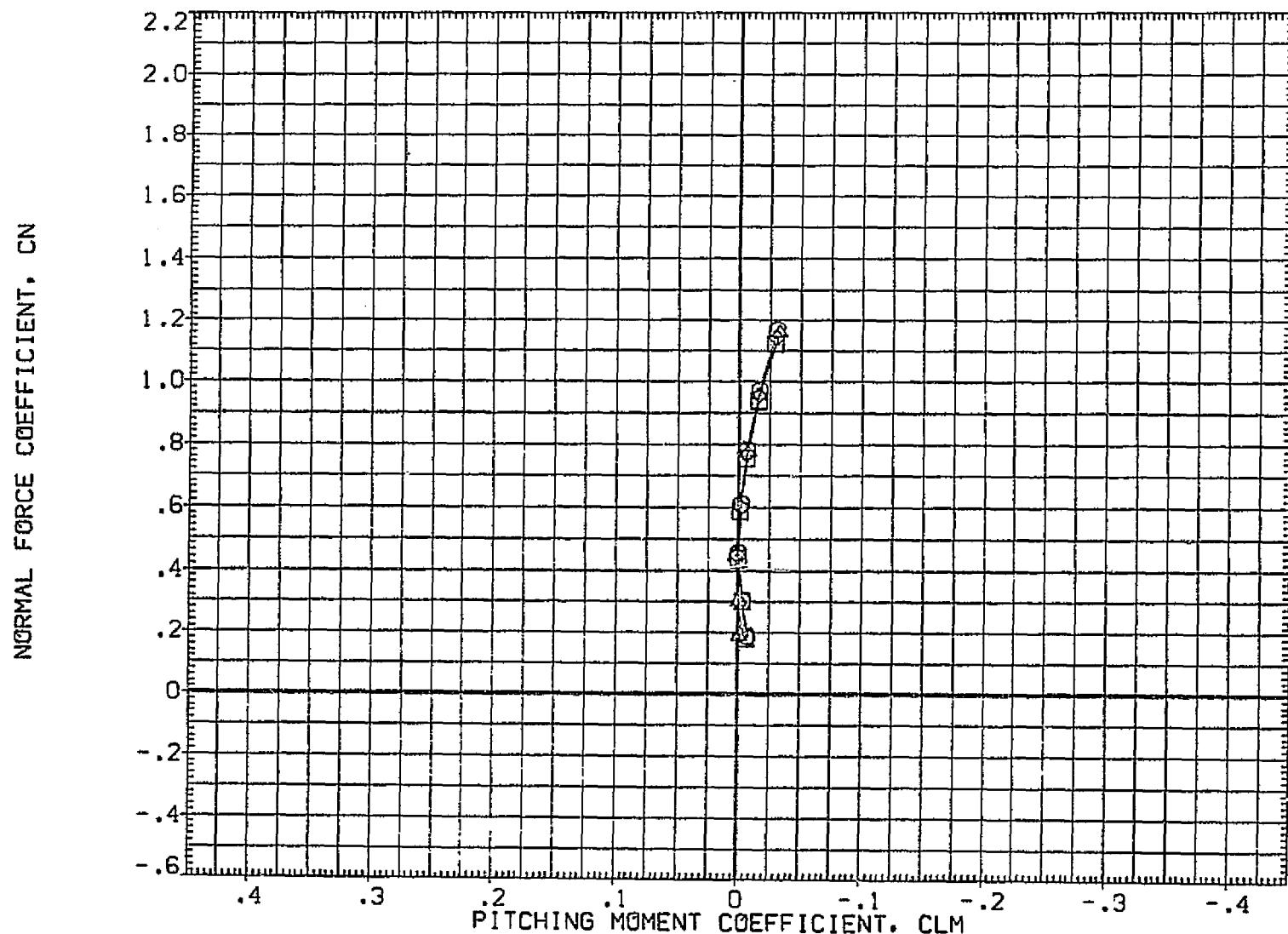


### SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF	474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF	936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XHREF	1076.7000 IN. X0
						YHREF	.0000 IN. Y0
						ZHREF	375.0000 IN. Z0
						SCALE	.0100

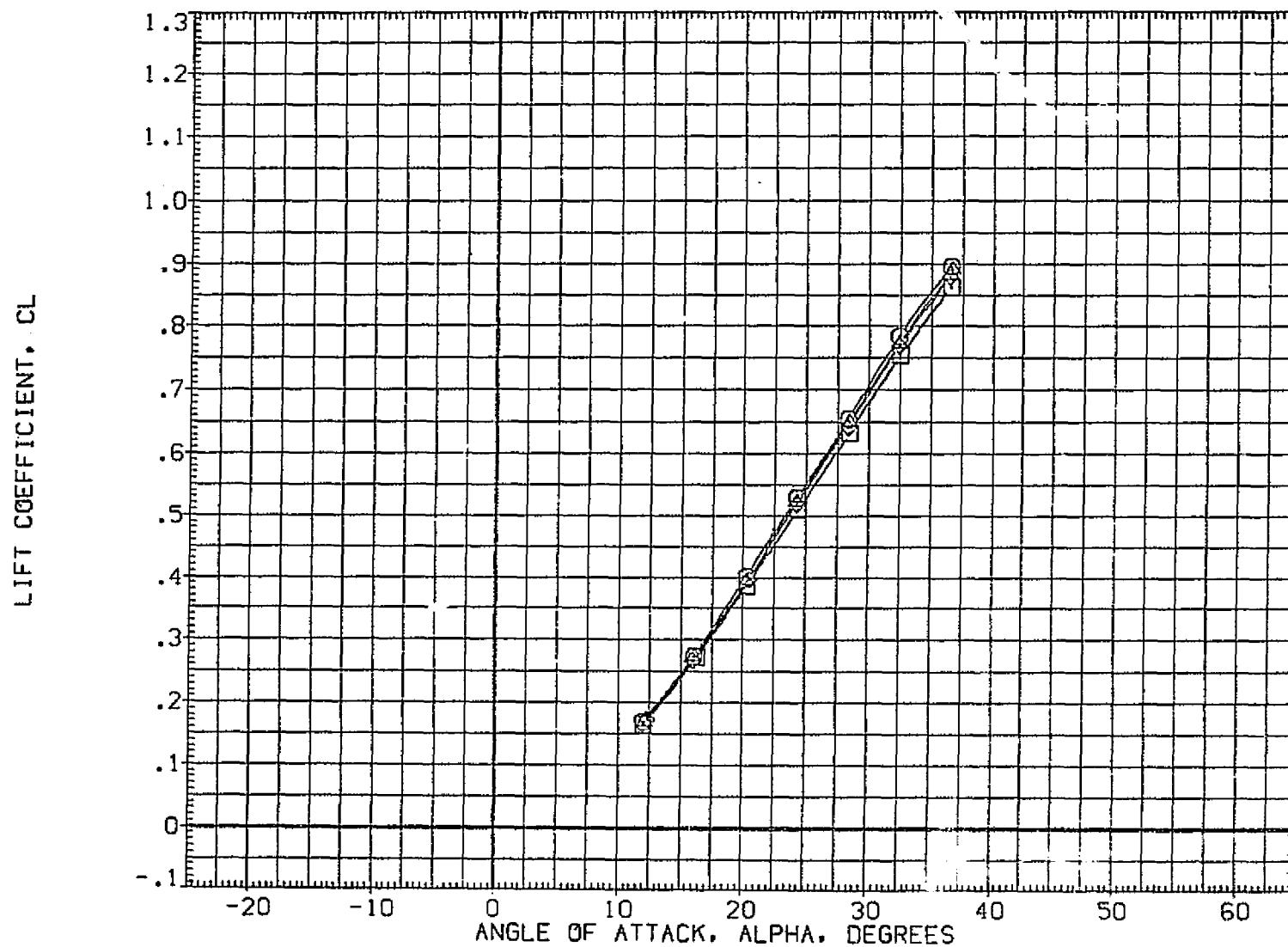


SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFL - P	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55,000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	.55,000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.930	.000	.55,000	.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	.55,000	.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

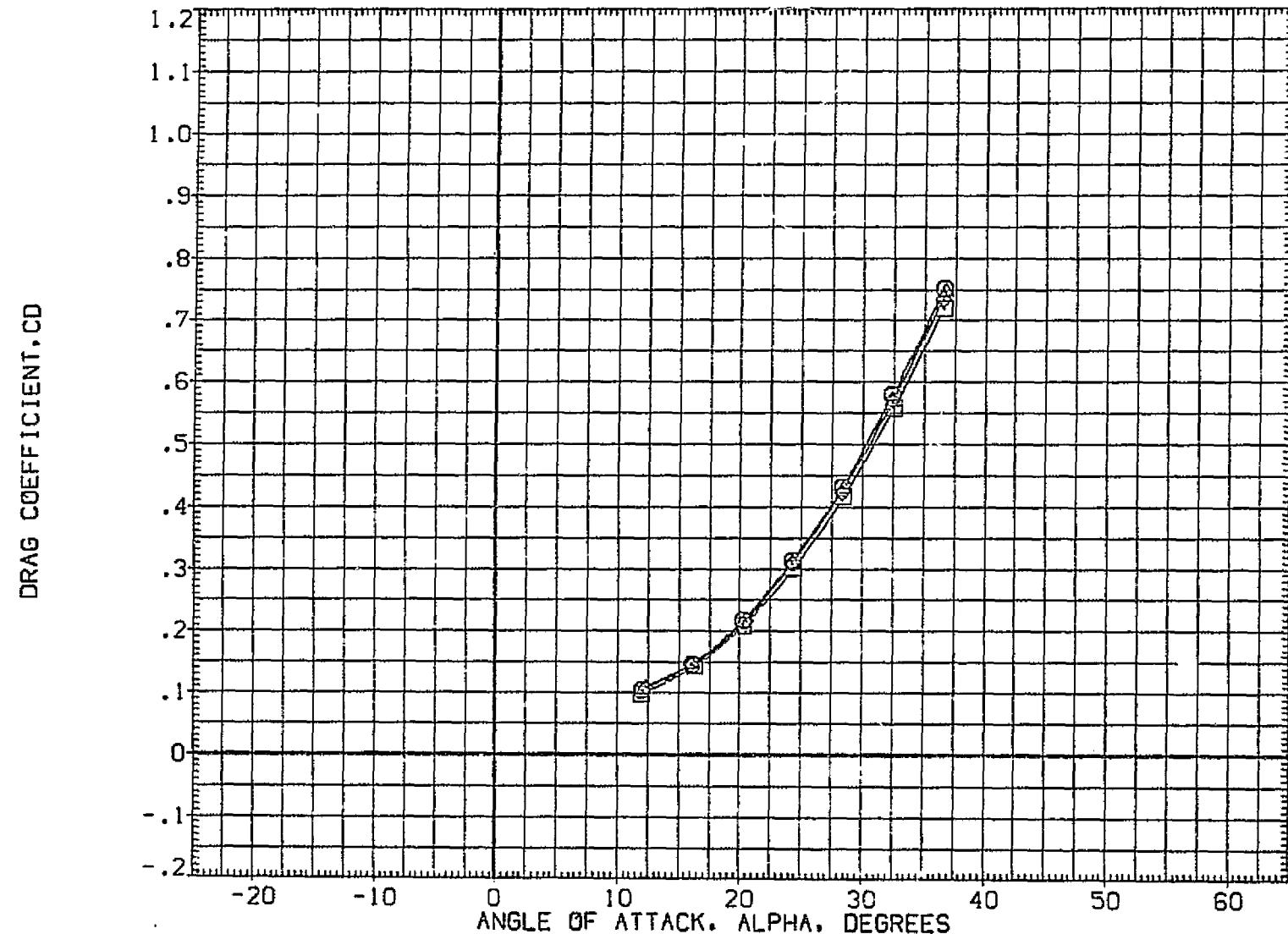


### SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

PAGE 84

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN.
						YMRP .0000 IN.
						ZMRP 375.0000 IN.
						SCALE .0100 ZG

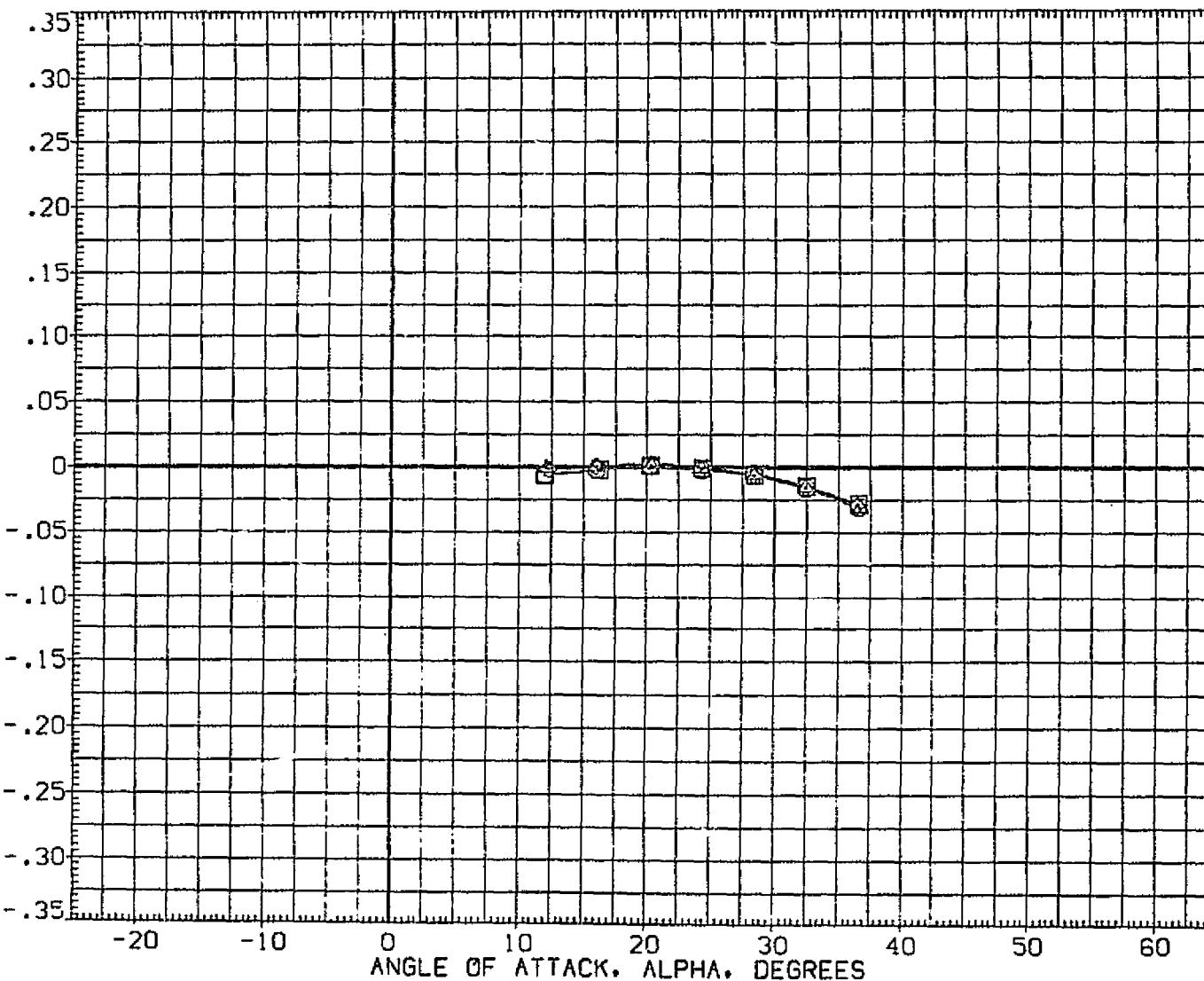


### SPEED BRAKE EFFECTIVENESS

(AO)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0
						ZMRP .0000 IN. Y0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

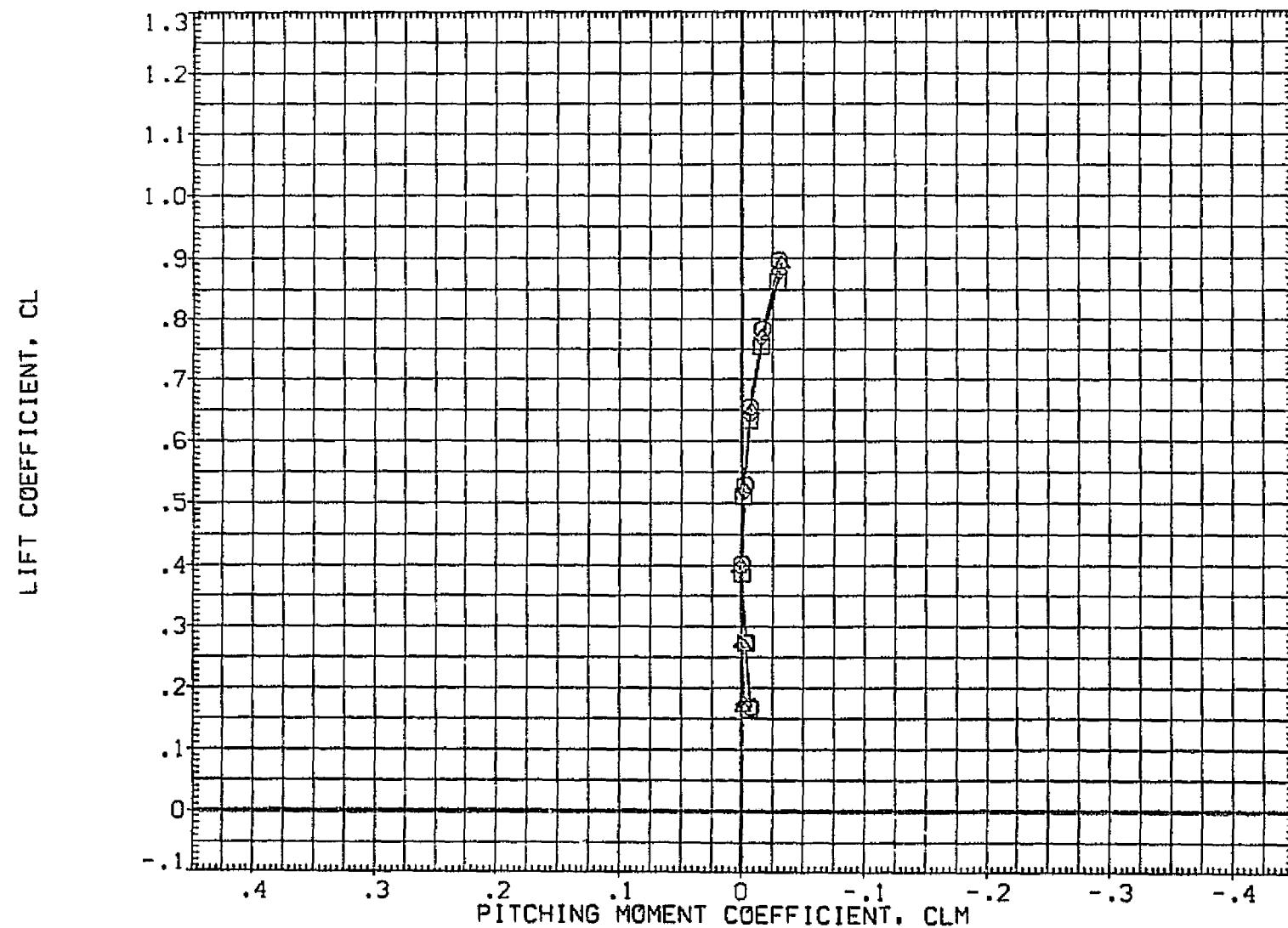


SPEED BRAKE EFFECTIVENESS

CADMACH = 10.31

PAGE 86

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

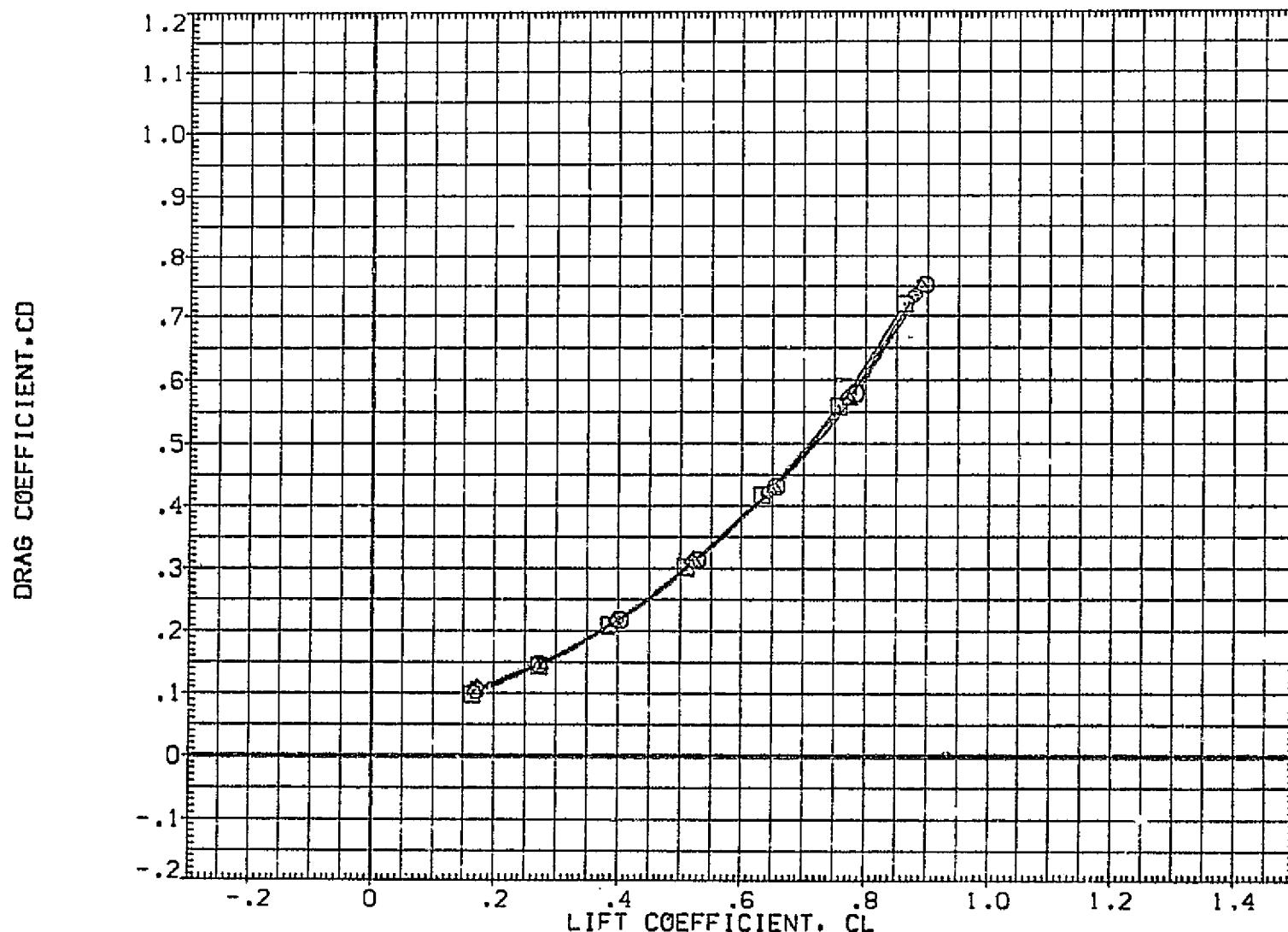


SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

PAGE 87

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION	
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000	SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF	474.8000	IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	55.000	.000	BREF	936.7000	IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	55.000	.000	XMRP	1076.7000	IN. XG
						YMRP	.0000	IN. YG
						ZMRP	375.0000	IN. ZG
						SCALE	.0100	



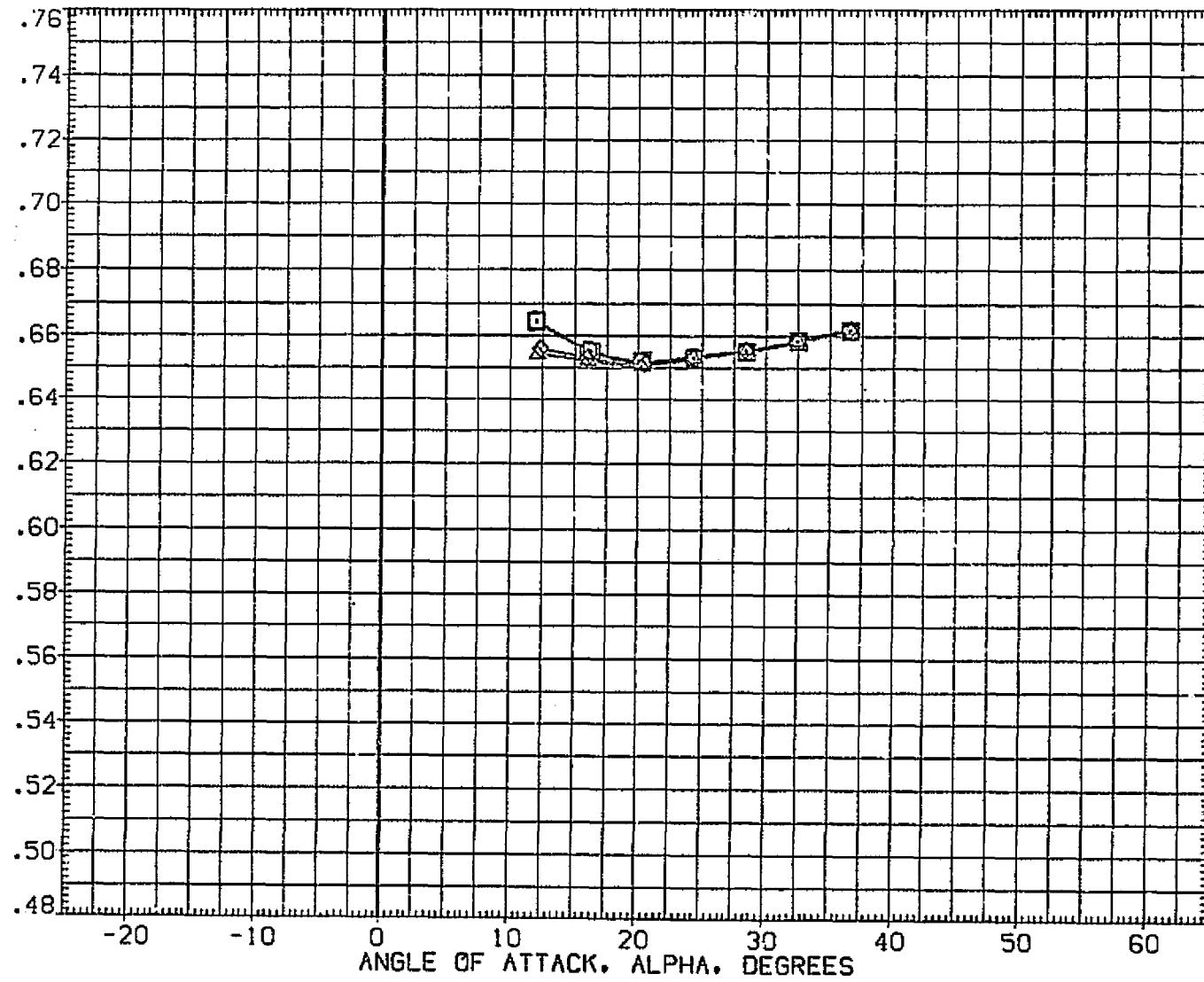
### SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	ELEVTR	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ003)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF 474.8000 IN.
(CQJ007)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF 936.7000 IN.
(CQJ009)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

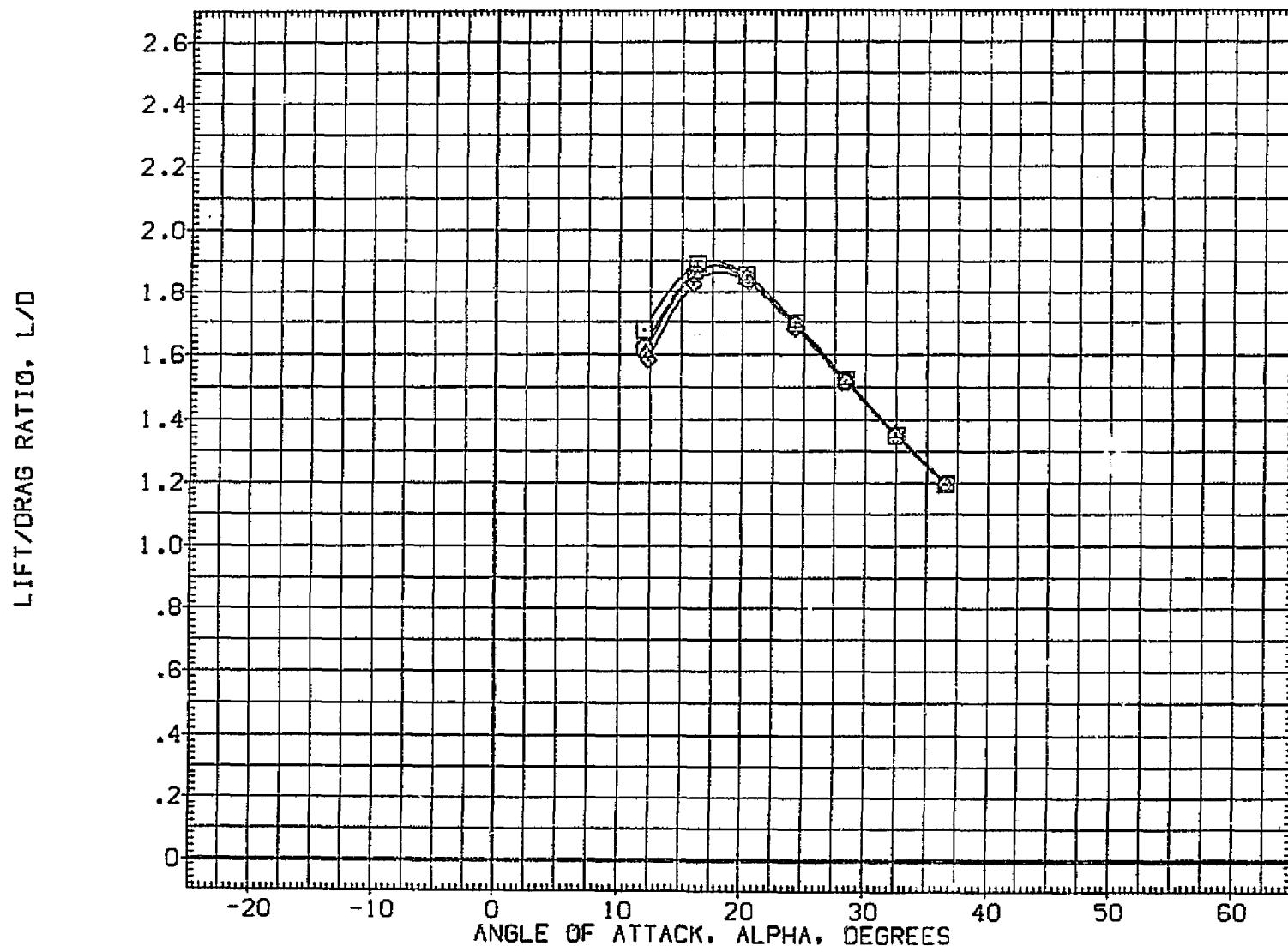
CENTER OF PRESSURE LOCATION BASED ON BODY LENGTH, XCP/L



SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	ELEVTR	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ003)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.245	.000	55.000	.000	LREF	474.8000 IN.
(CQJ007)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.980	.000	85.000	.000	BREF	936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.214	.000	85.000	.000	XMRP	1076.7000 IN. X0
						YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	0100

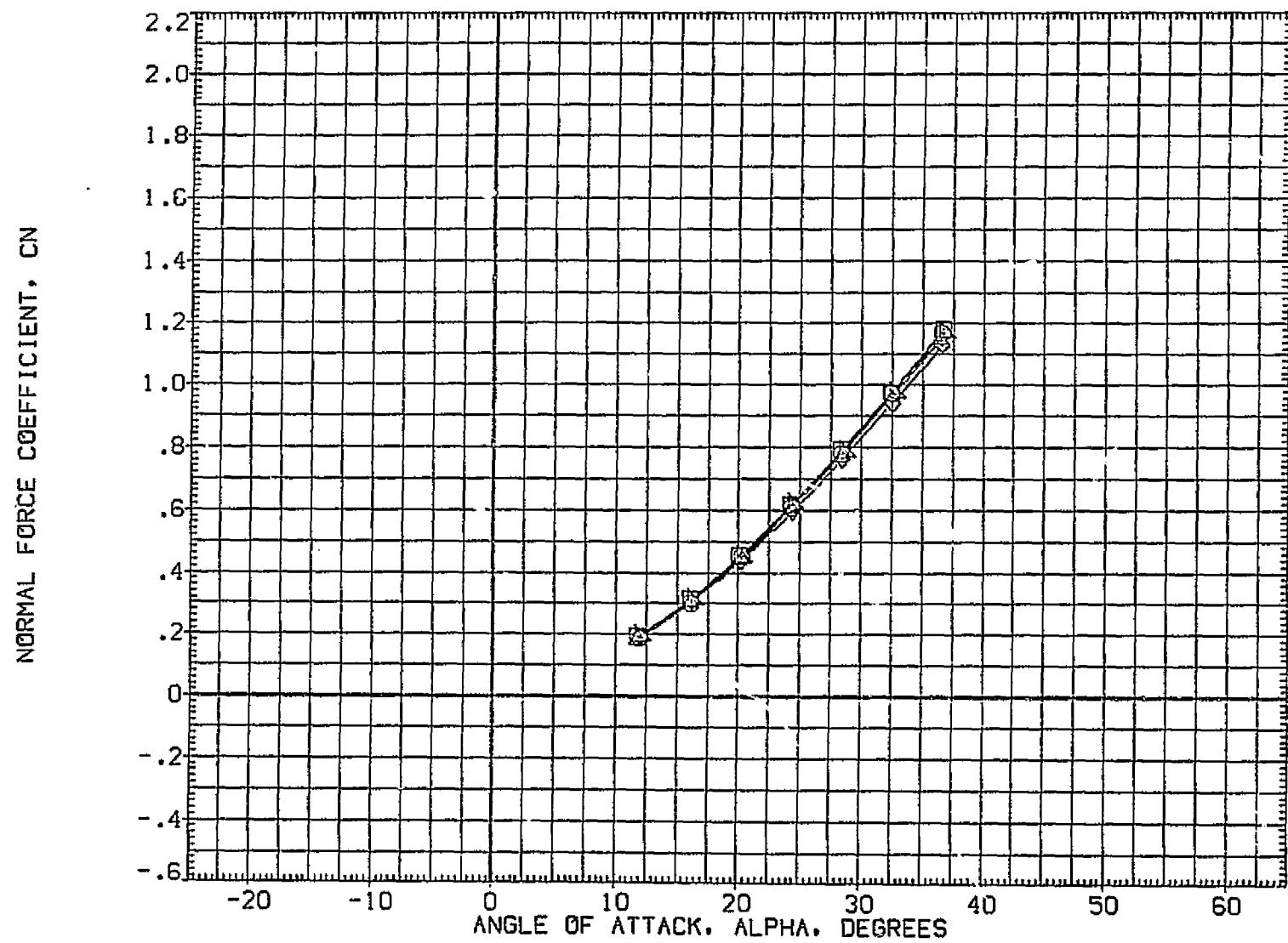


### SPEED BRAKE EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	65.000	-5.000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	65.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100



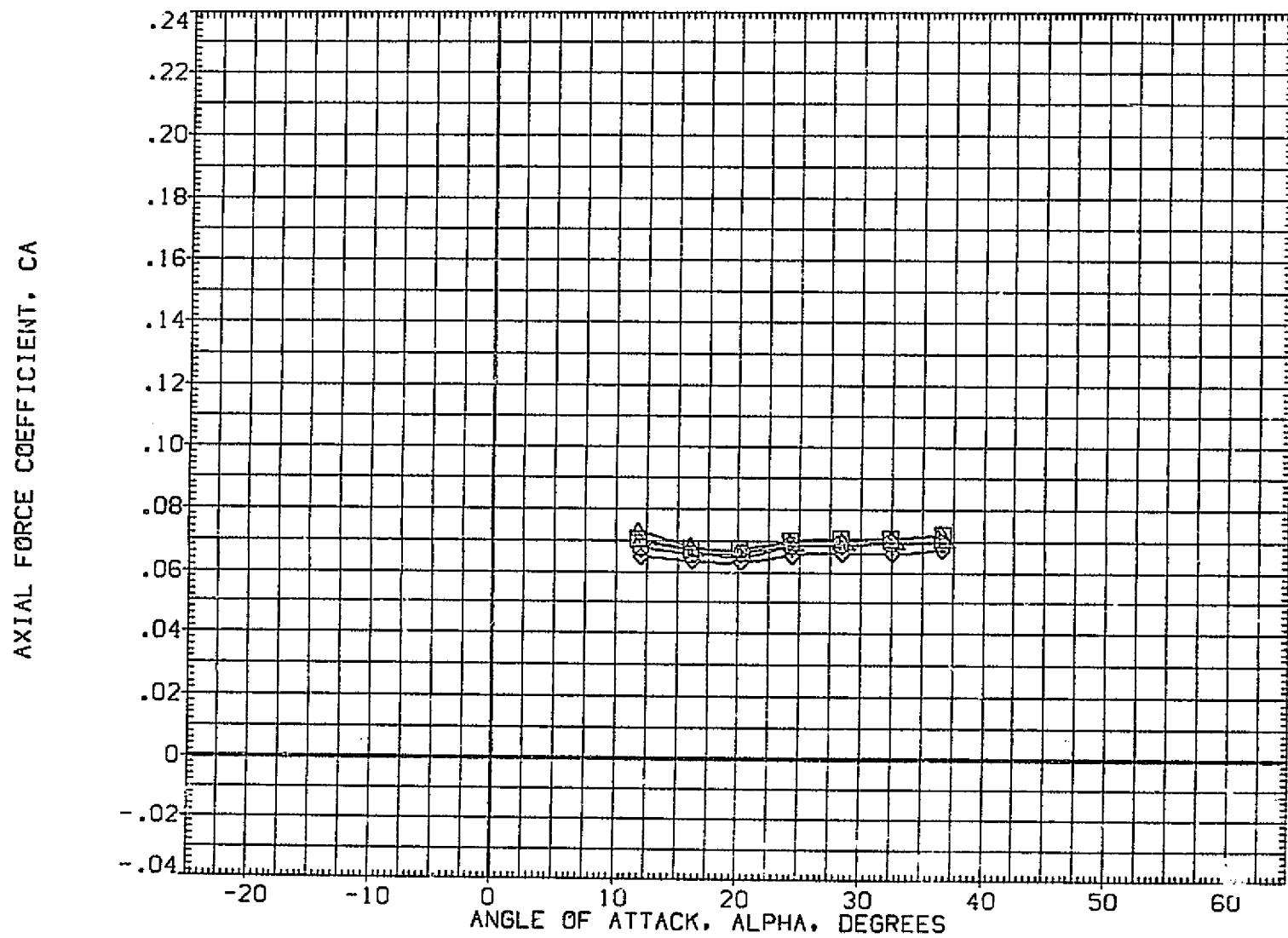
SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	SREF	2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF	474.0000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.233	.000	55.000	-5.000	BREF	936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.211	.000	85.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

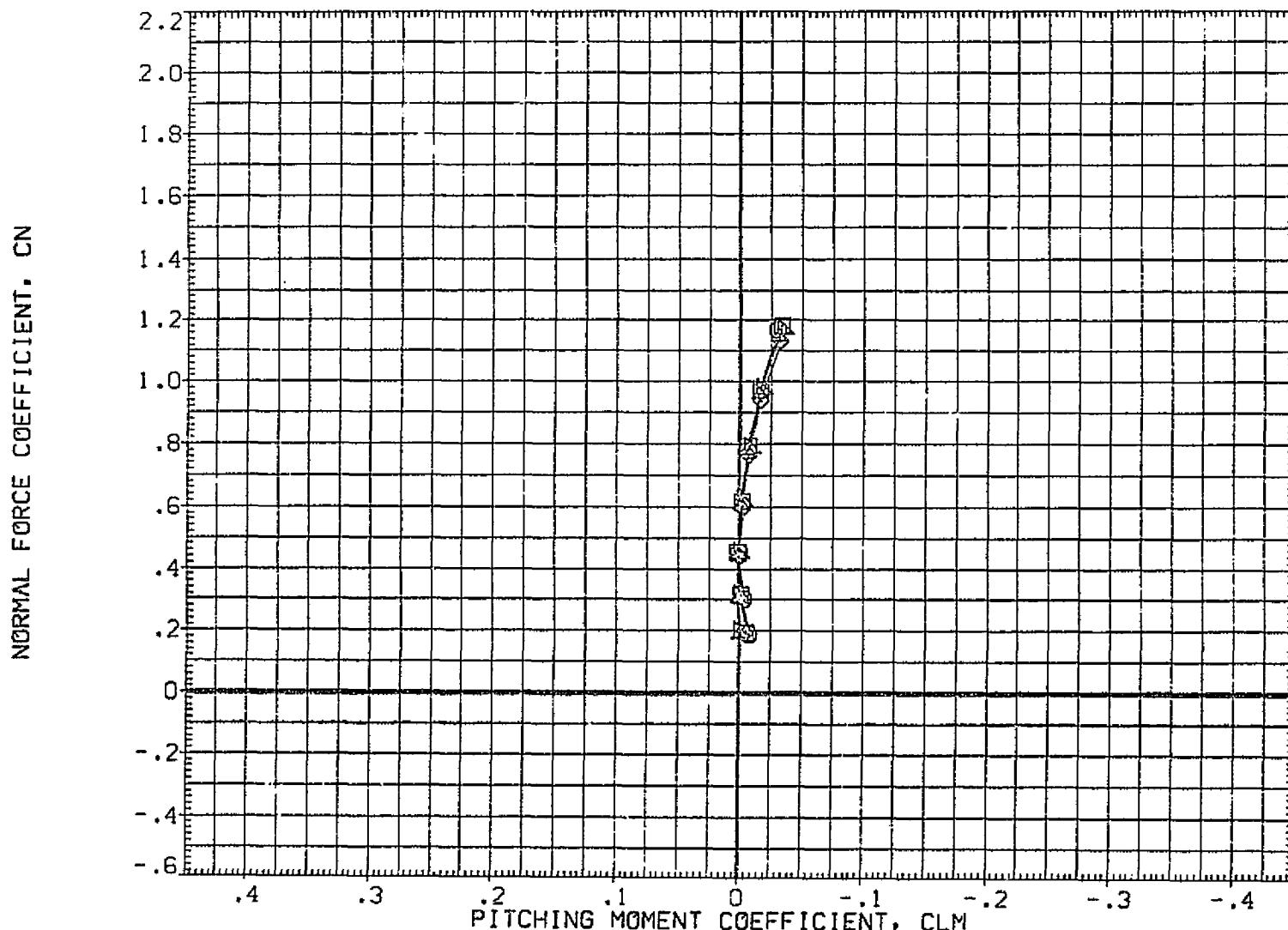


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF	474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF	936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

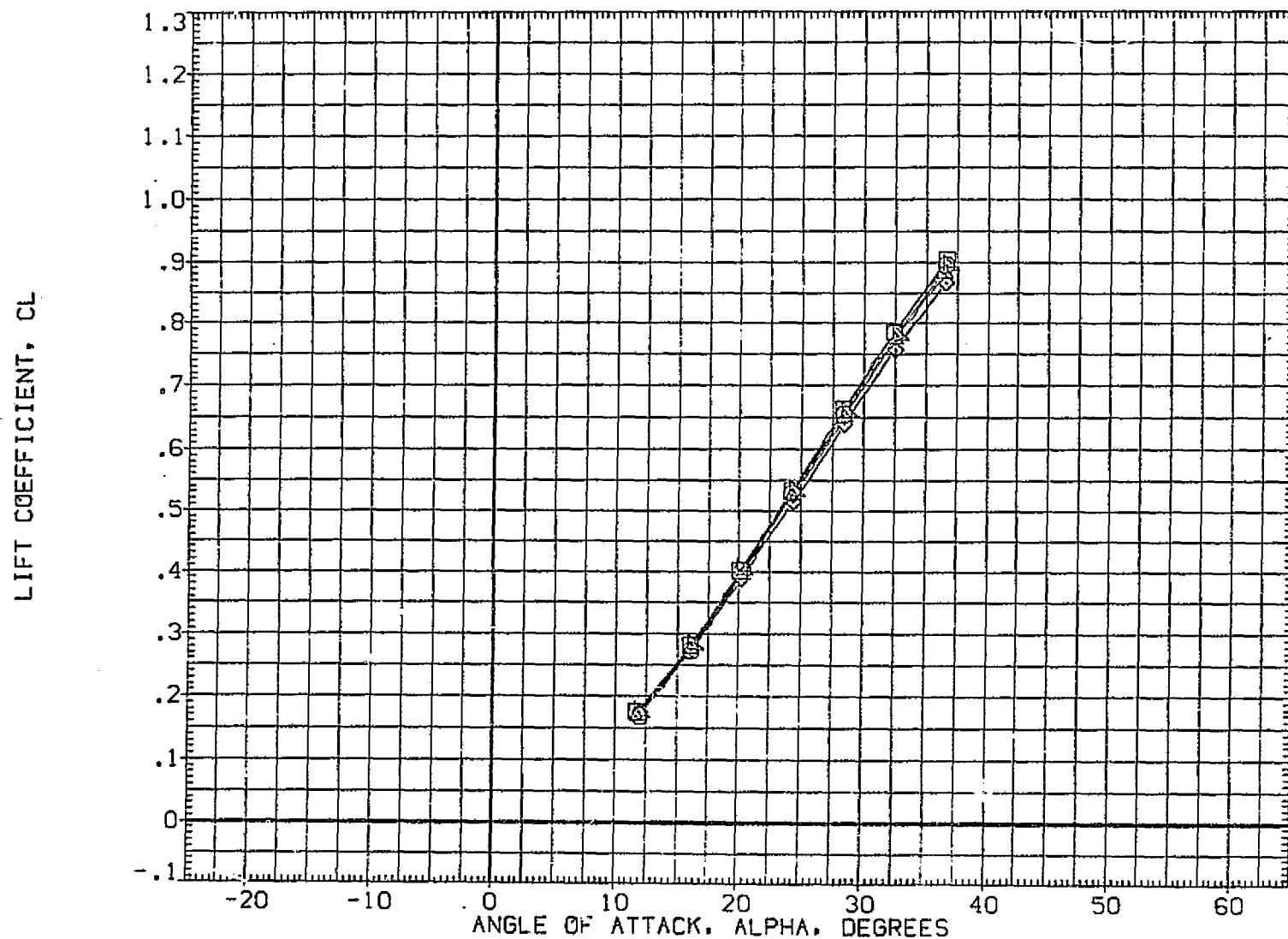


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

CADMACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.500	SREF	2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF	474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF	936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	ZMRP	.0000 IN. Y0
						SCALE	.0100 IN. Z0

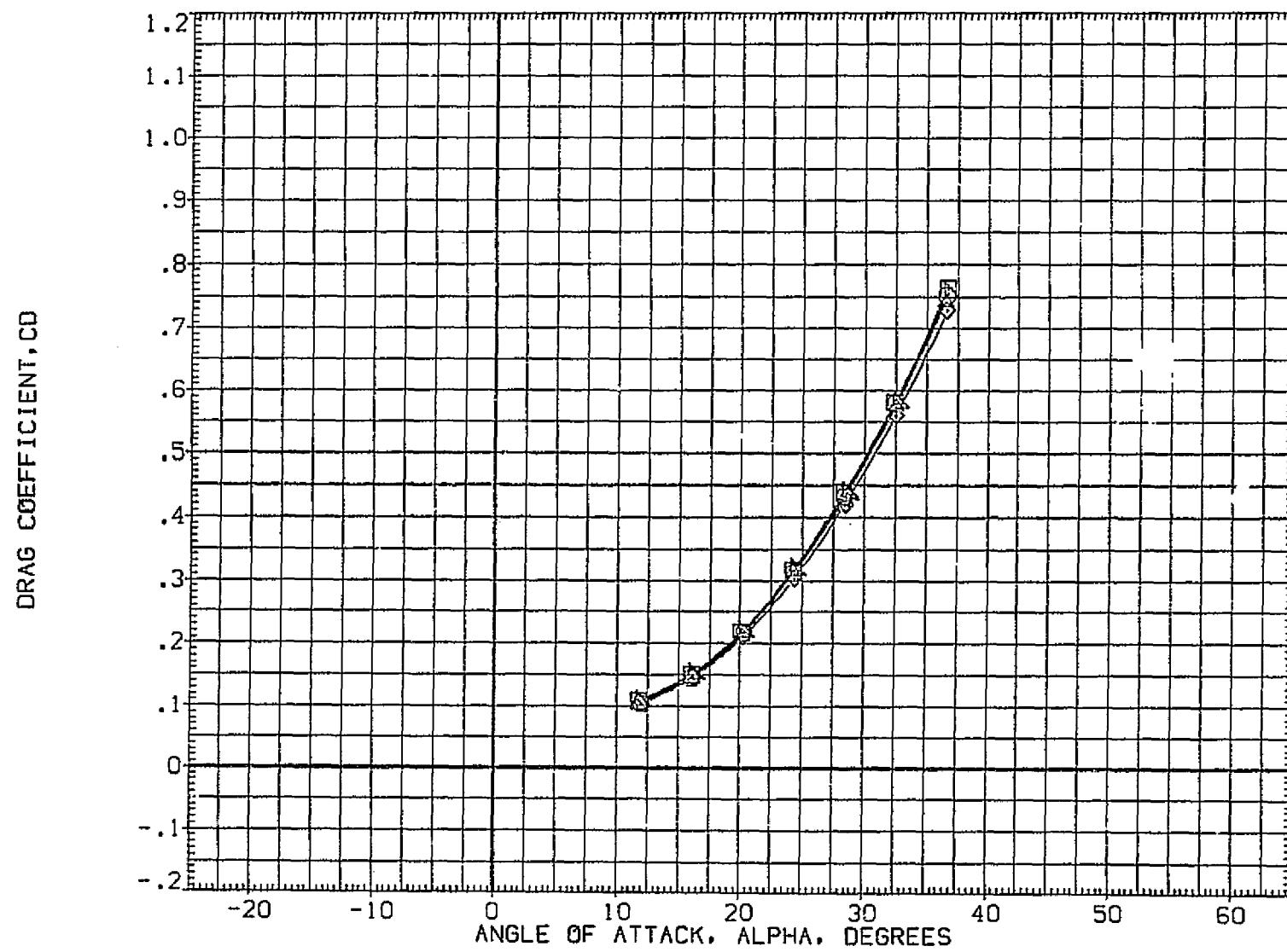


### SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

CADMACH = 10.1

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	-.000	SREF	2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.55.000	-5.000	LREF	474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	.55.000	-5.000	BREF	936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	.85.000	-15.000	XMRP	1076.7000 IN. XG
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	.85.000	-5.000	YMRP	.0000 IN. YG
						ZMRP	375.0000 IN. ZG
						SCALE	.0100



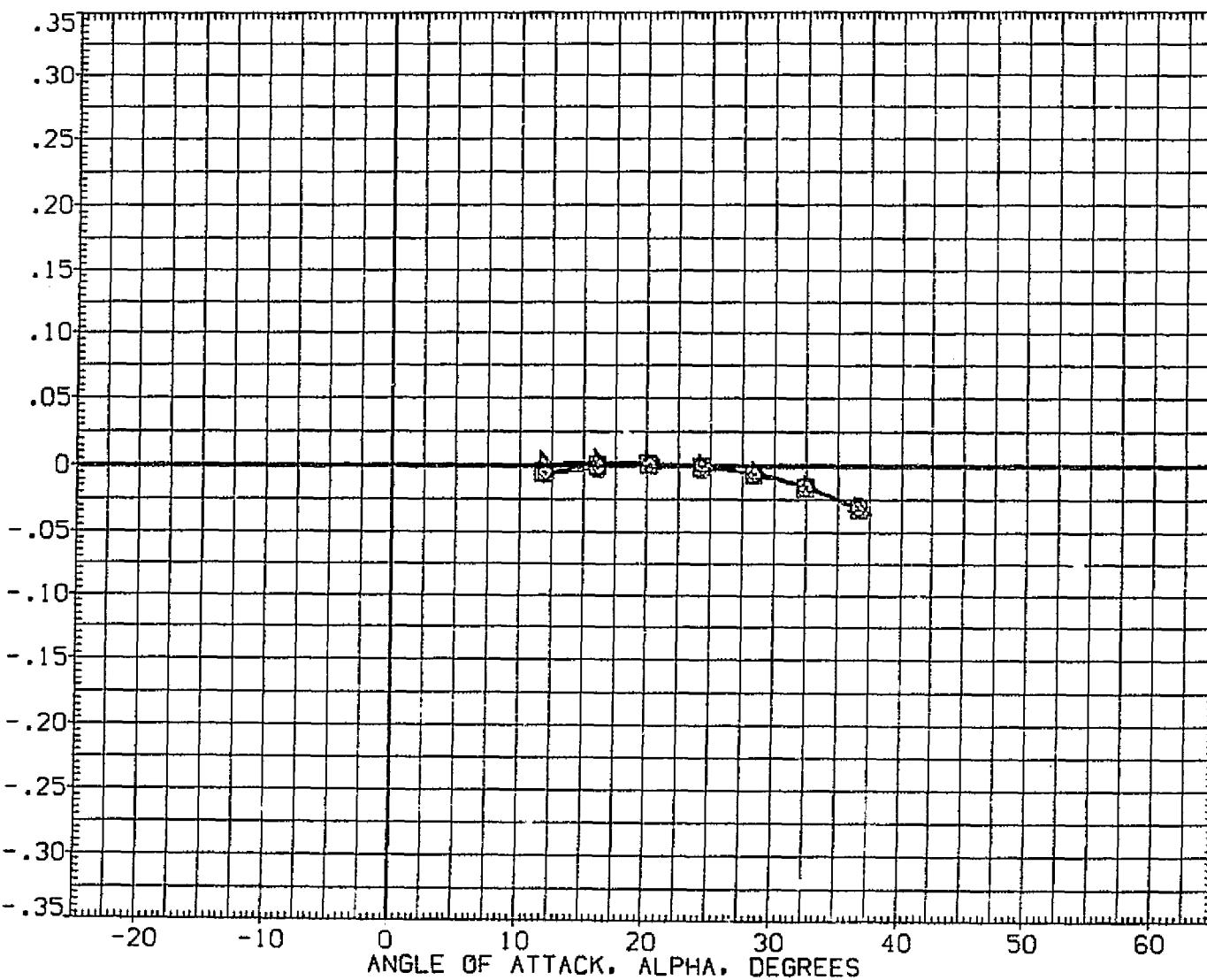
SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RNL	BOFLAP	SPOBRK	BETA	REFERENCE INFORMATION
{CQJ001}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
{CQJ002}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
{CQJ004}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF 976.7000 IN.
{CQJ008}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. X0
{CQJ010}	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

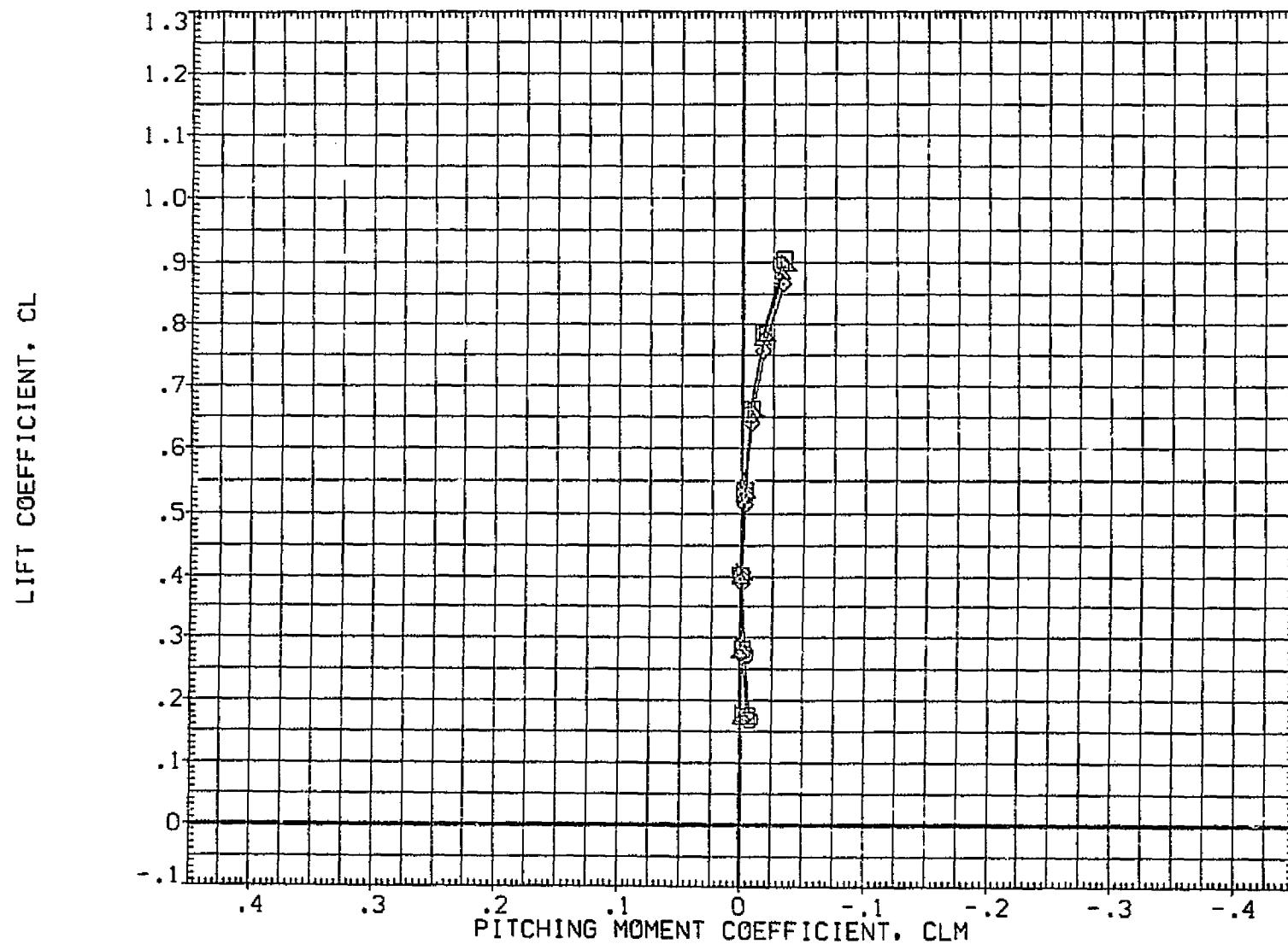


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPOBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	-5,000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55,000	-5,000	BREF 936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85,000	-5,000	XMRP 1076.7000 IN. X0
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85,000	-5,000	YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

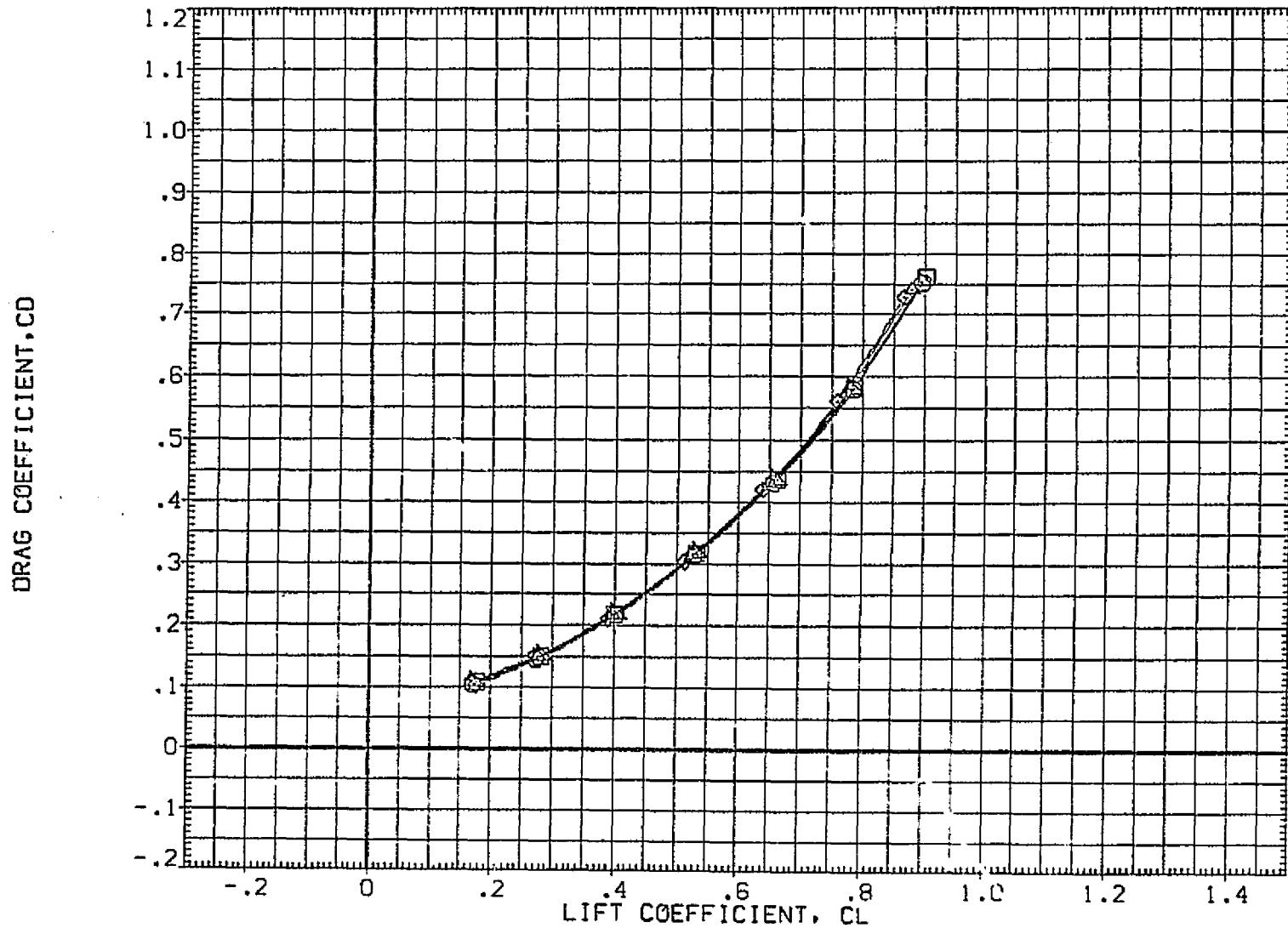


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	SPDBRK	BETA	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF 2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF 474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD	1.233	.000	55.000	-5.000	BREF 936.7000 IN.
(CQJ009)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP 1076.7000 IN. XG
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100

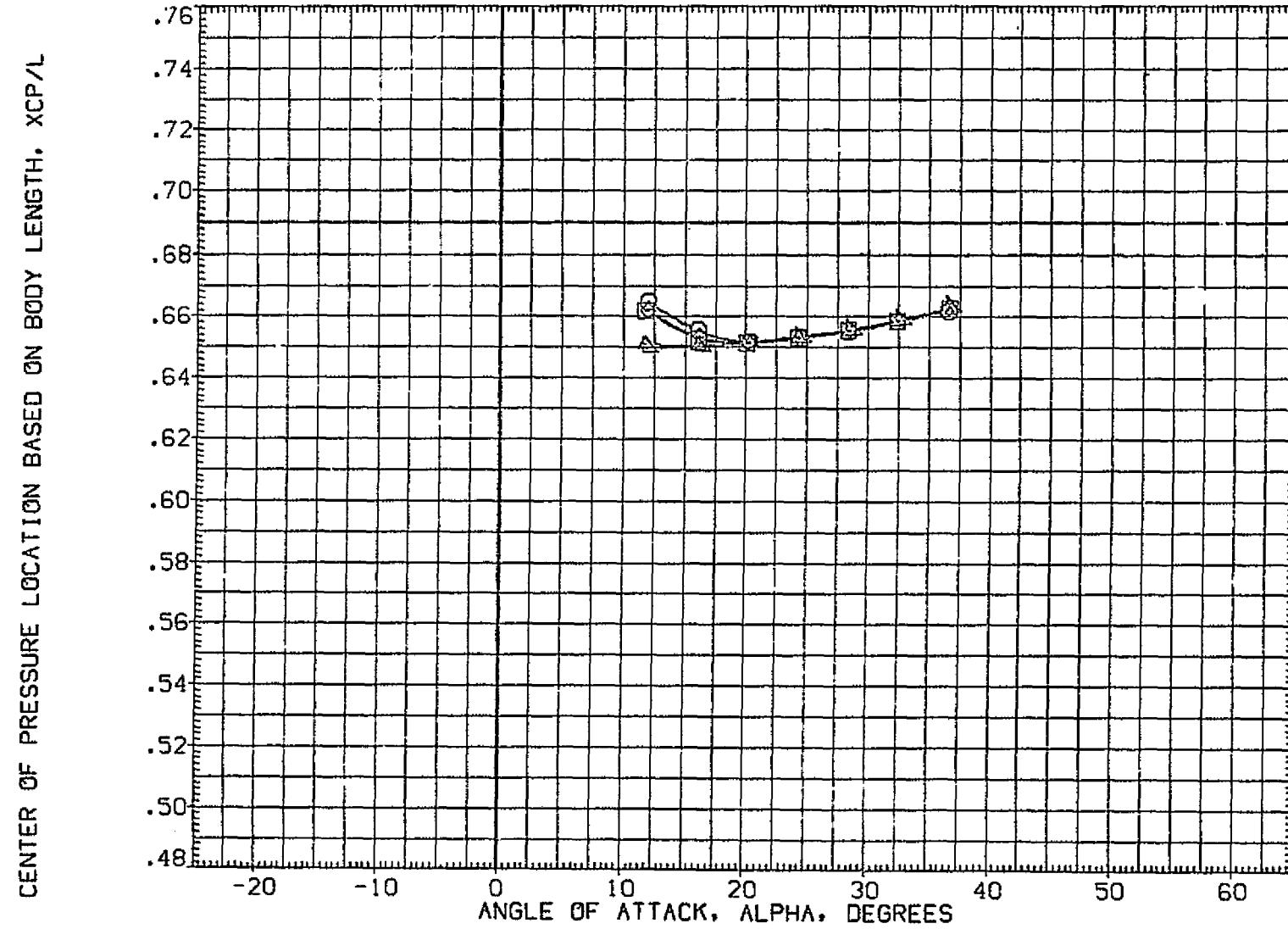


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

CADMACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	SPDBRK	BETA	REFERENCE	INFORMATION
(DQ/001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	.000	SREF	2690.0000 SQ.FT.
(CQJ/002)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55.000	-5.000	LREF	474.8000 IN.
(CQJ/004)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55.000	-5.000	BREF	936.7000 IN.
(CQJ/008)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85.000	-5.000	XMRP	1076.7000 IN. X0
(CQJ/010)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85.000	-5.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0100

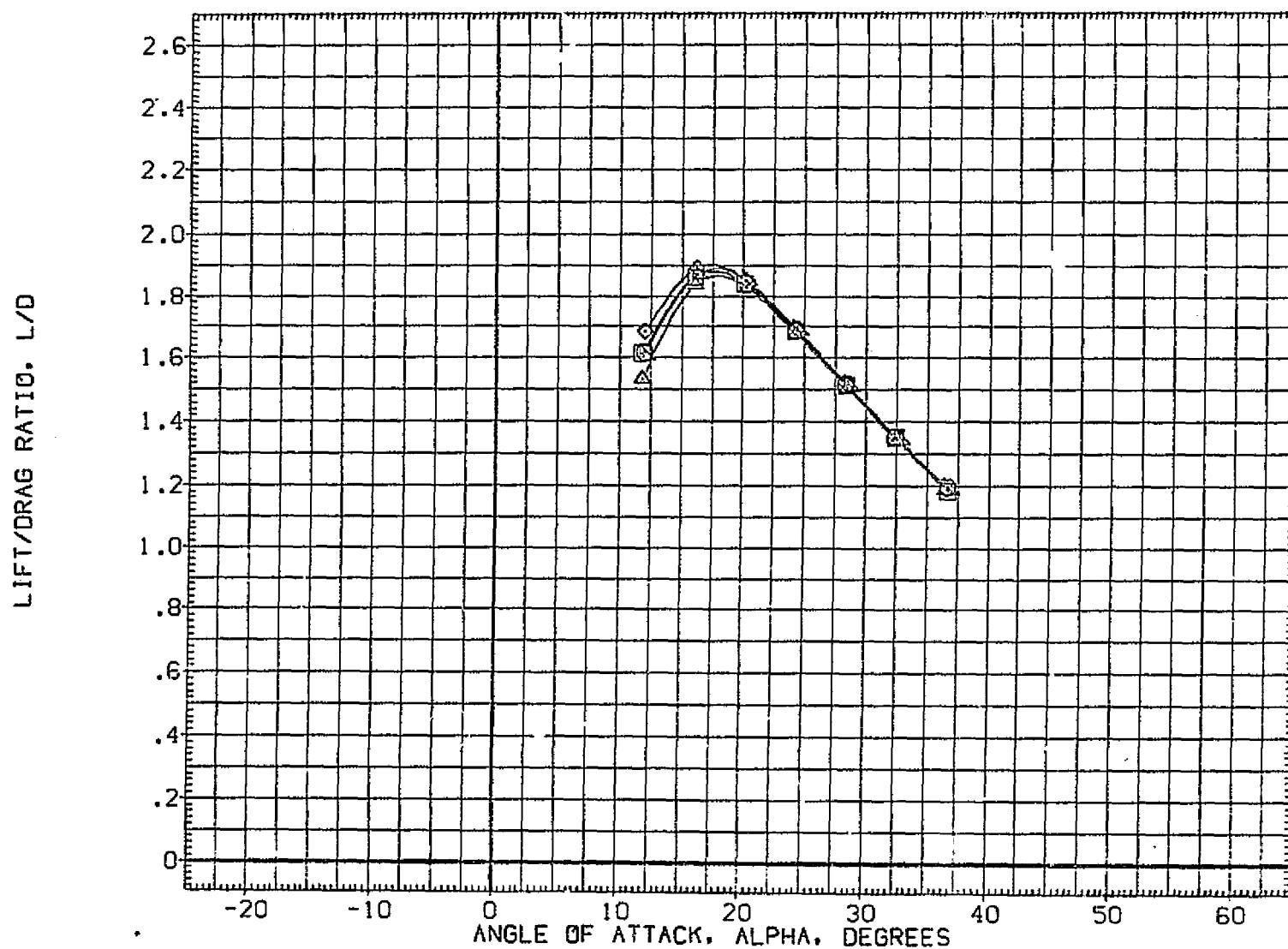


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

CAIMACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	R/N/L	BDFLAP	SPOSRK	BETA	REFERENCE	INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	.000	SREF	2690.0000 SQ.FT.
(CQJ002)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	55,000	-5.000	LREF	474.8000 IN.
(CQJ004)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.233	.000	55,000	-5.000	BREF	936.7000 IN.
(CQJ008)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.985	.000	85,000	-5.000	XMRP	1076.7000 IN. XG
(CQJ010)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALED	1.211	.000	85,000	-5.000	YMRP	.0000 IN.
						ZMRP	375.0000 IN. ZD
						SCALE	.0100

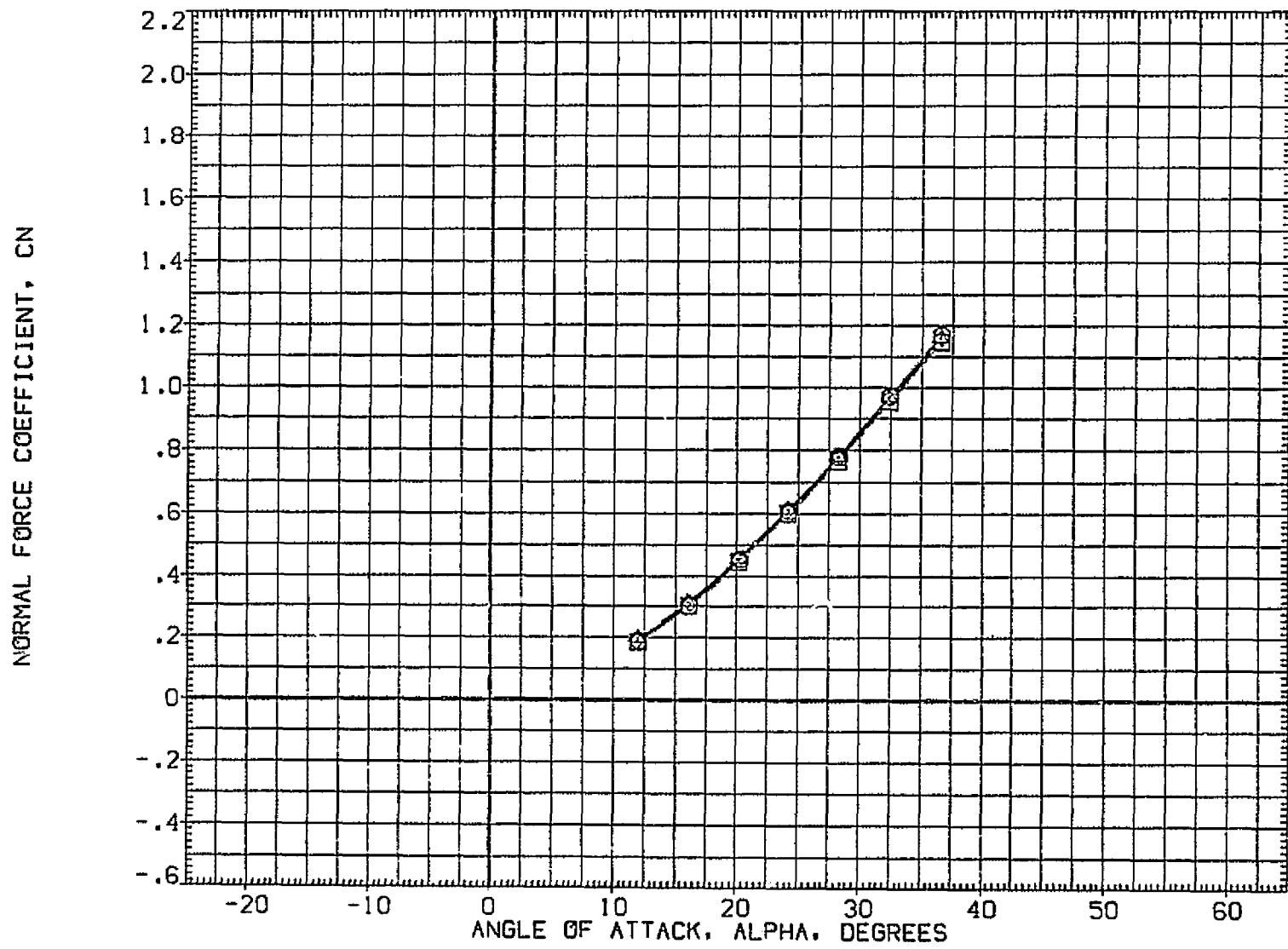


SPEED BRAKE EFFECTIVENESS AT -5 DEGREES BETA

(A)MACH = 10.31

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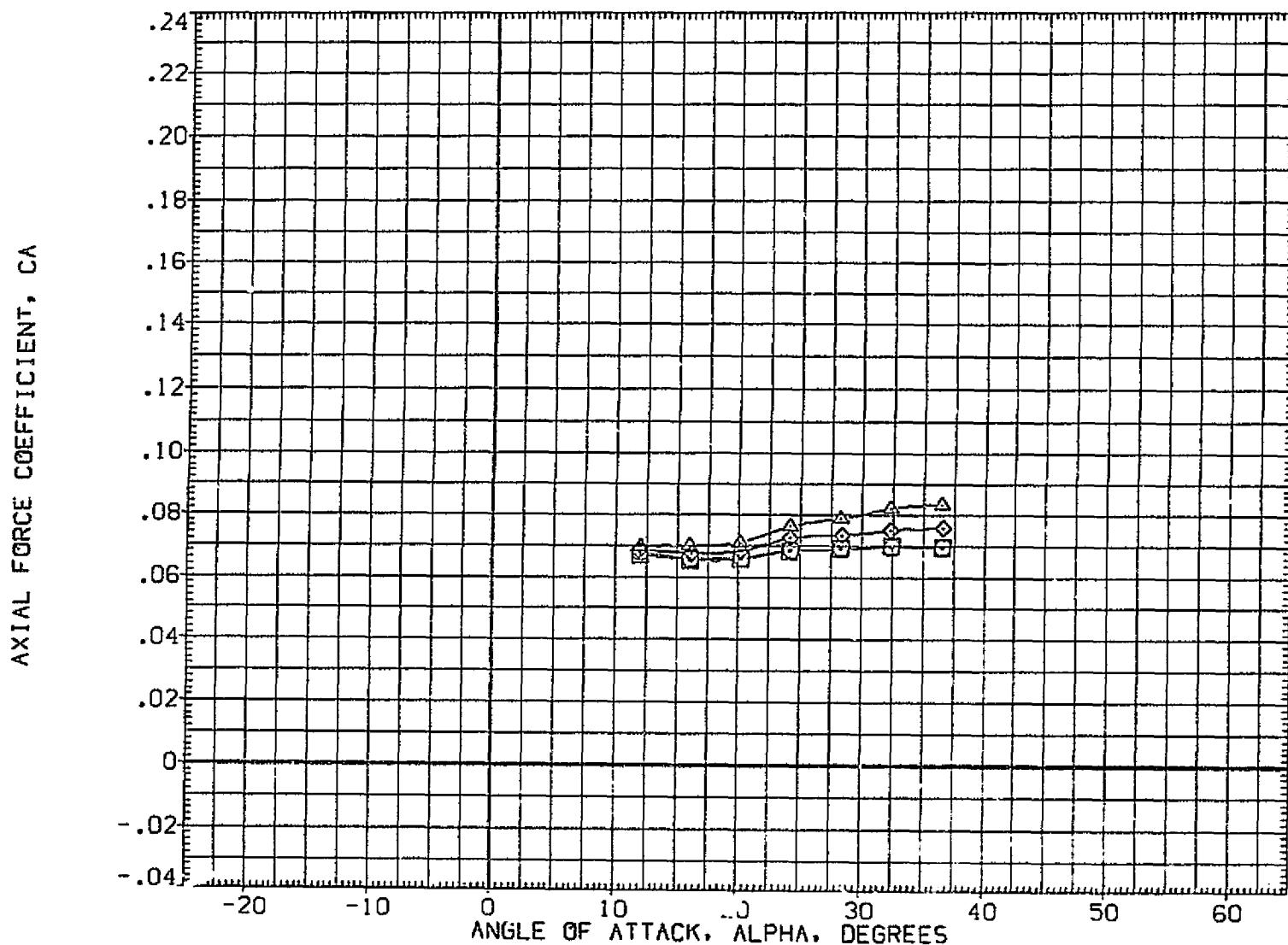
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
( CQJ001 ) O	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	:935	.000	.000	.000	SREF 2690.0000 SQ.FT.
( CQJ024 ) ◊	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	:990	.000	.000	5.000	LREF 474.8000 IN.
( CQJ025 ) △	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	:970	.000	.000	10.000	XMRP 936.7000 IN.
( CQJ026 ) □	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	ZMRP .0000 IN. XG
						SCALE 375.0000 IN. ZG
						.0100



AILERON EFFECTIVENESS

(A)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

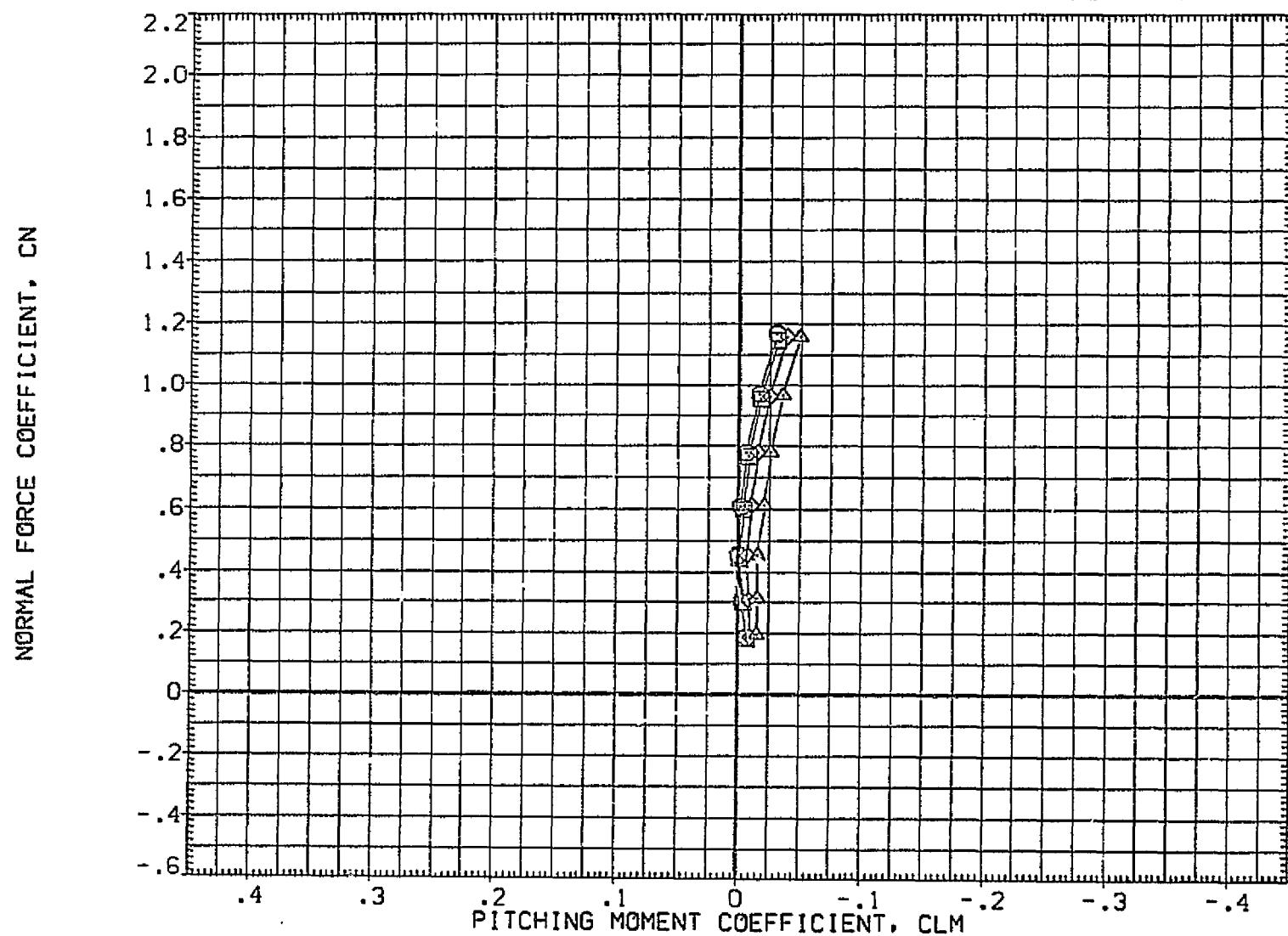


### AILERON EFFECTIVENESS

(AO)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AILRDN	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

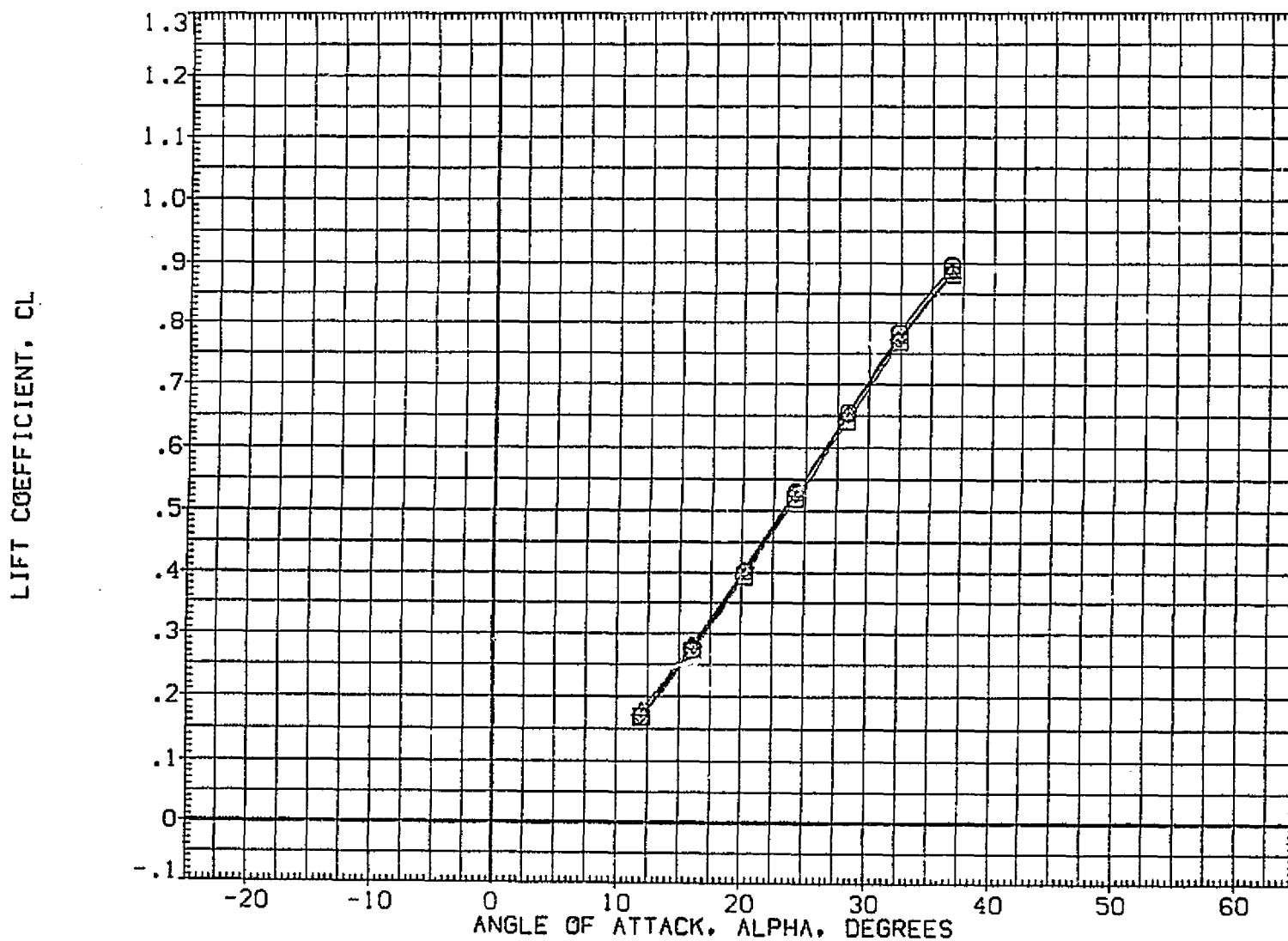


AILERON EFFECTIVENESS

(AO)MACH = 10.31

PAGE 103

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AIRLON	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	SREF 2690.0000	50.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	LREF 474.8000	IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	BREF 936.7000	IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	XMRP 1076.7000	IN. X0
					YMRP .0000	IN. Y0
					ZMRP 375.0000	IN. Z0
					SCALE .0100	

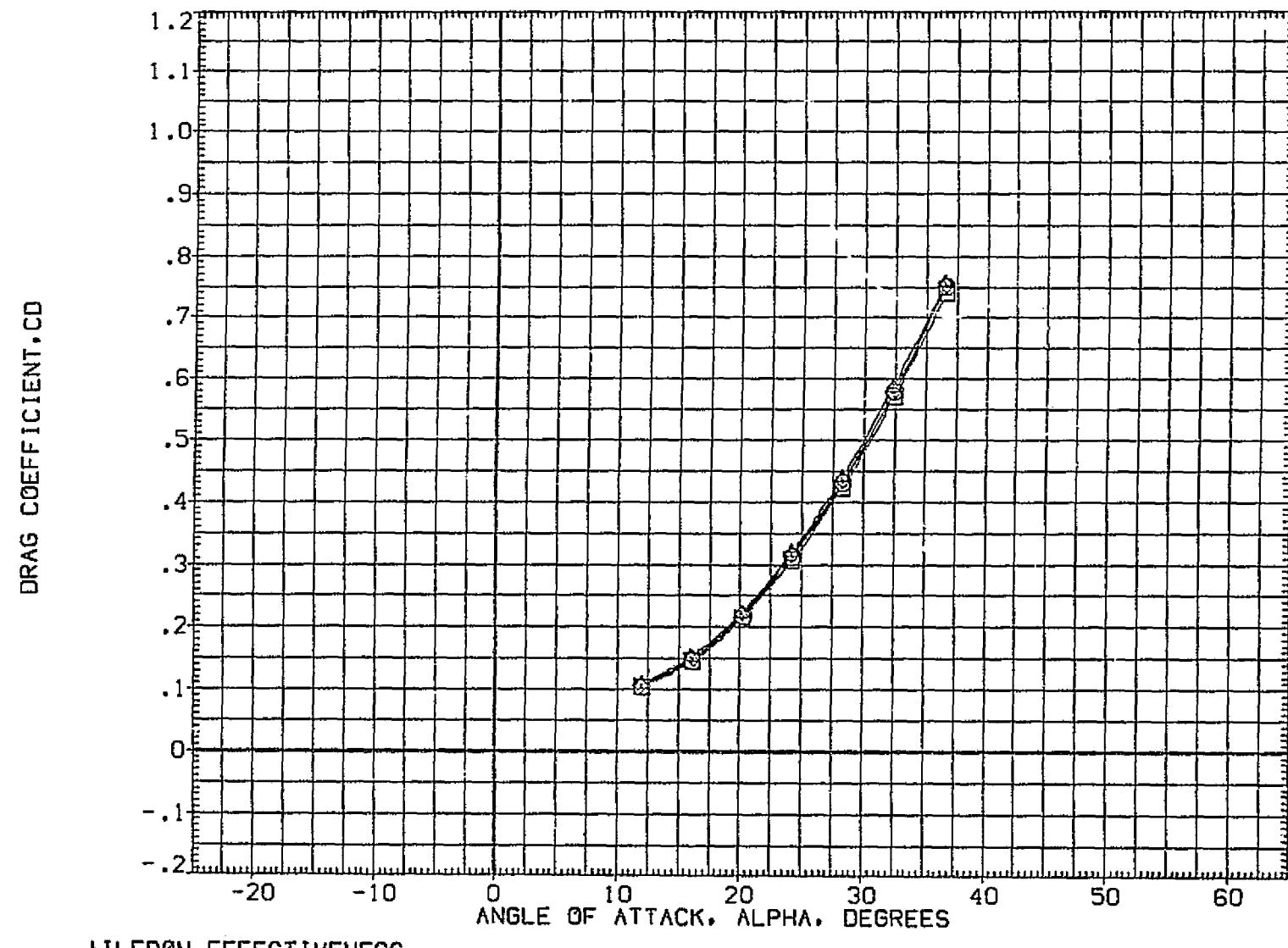


### AILERON EFFECTIVENESS

(AO)MACH = 10.31

PAGE 104

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AILRON	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100

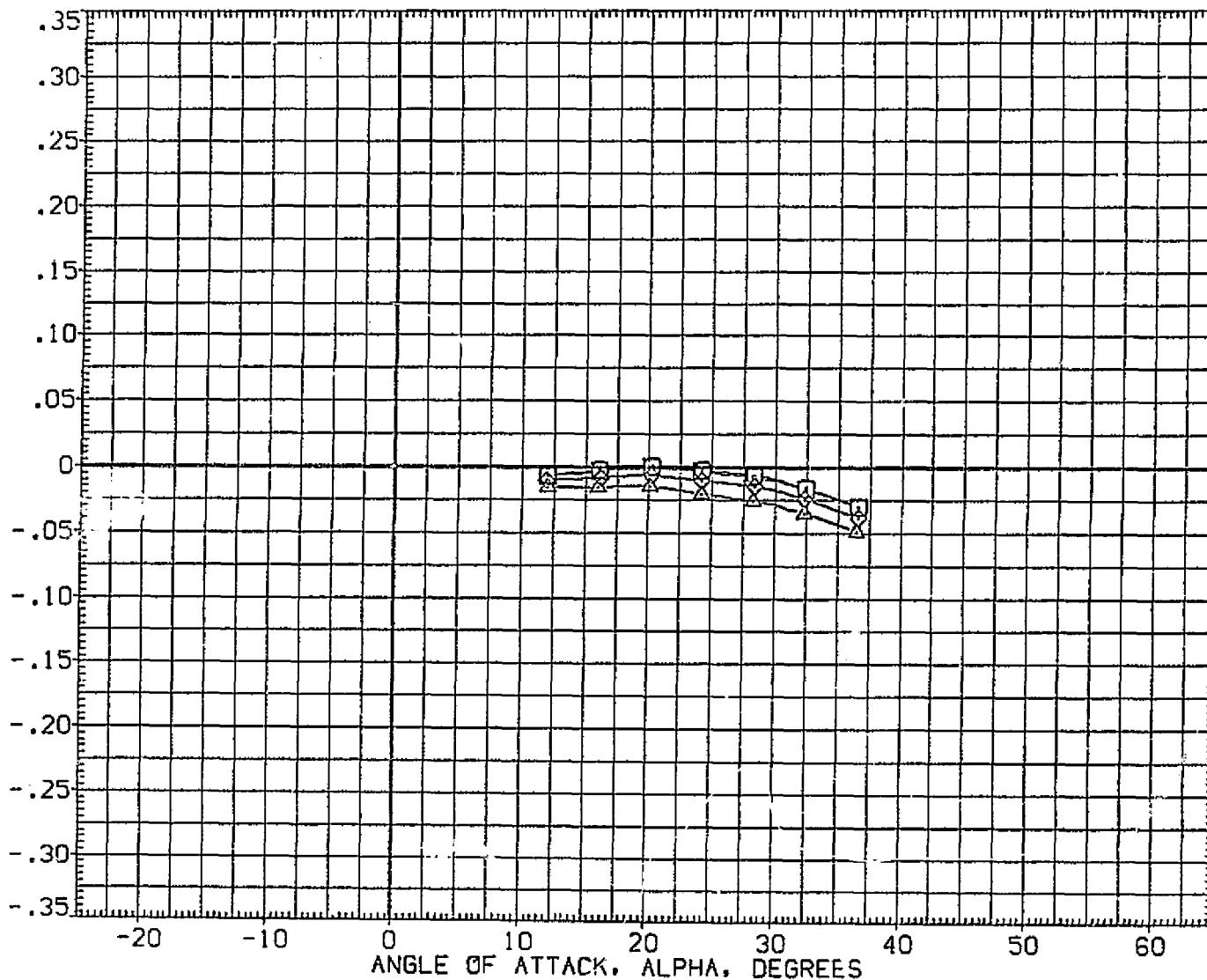


### AILERON EFFECTIVENESS

(AO)MACH = 10.31

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRDN	REFERENCE INFORMATION
(CQJ001)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEA	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

PITCHING MOMENT COEFFICIENT, CLM

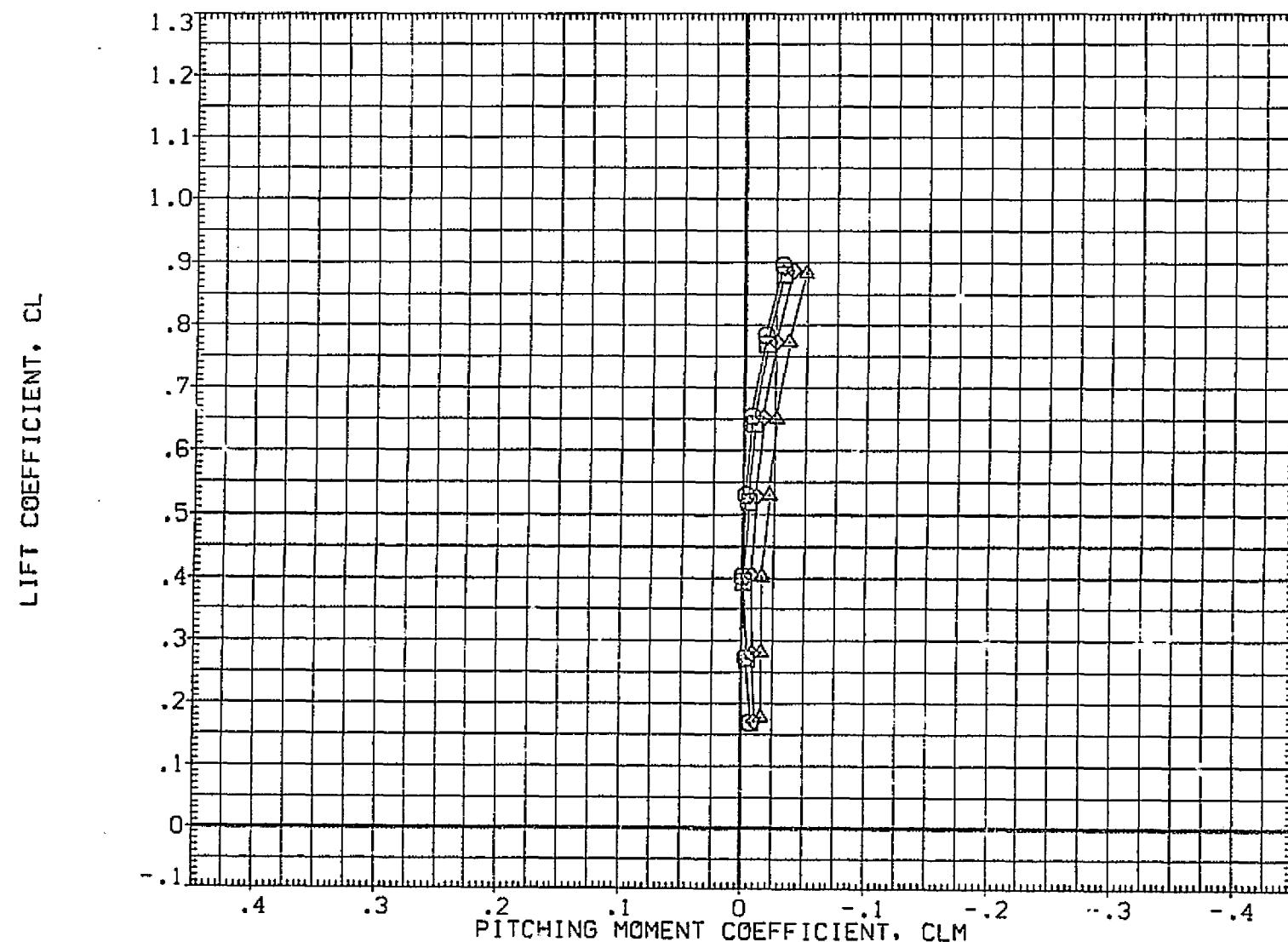


### AILERON EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	SDFLAP	ELEVTR	AILRDN	REFERENCE INFORMATION
(DQJ021)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	DA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. XG
						YMRP .0000 IN. YG
						ZMRP 375.0000 IN. ZG
						SCALE .0100

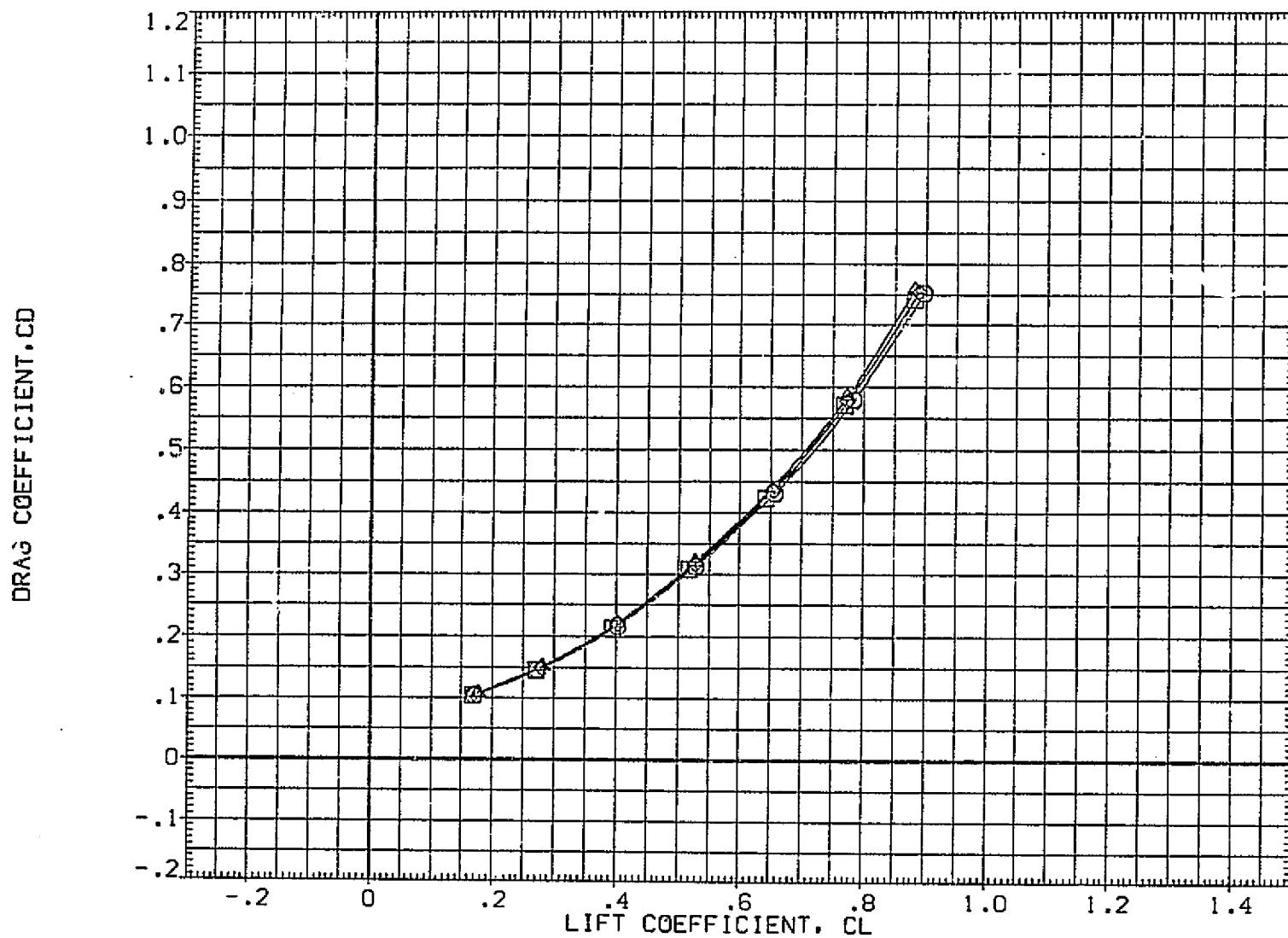


AILERON EFFECTIVENESS

(A)MACH = 10.31

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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AIRLON	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

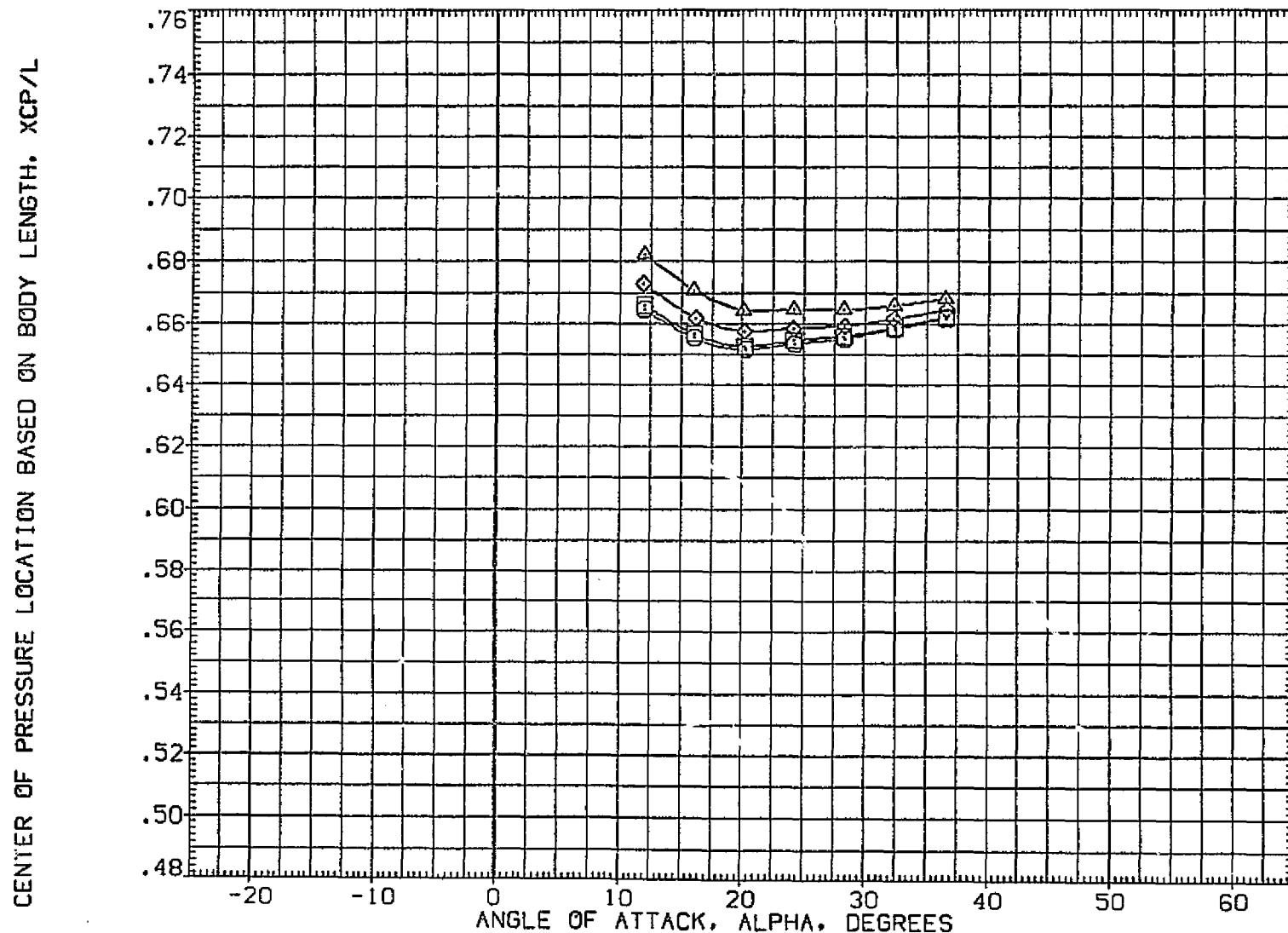


### AILERON EFFECTIVENESS

(ADMACH = 10.31

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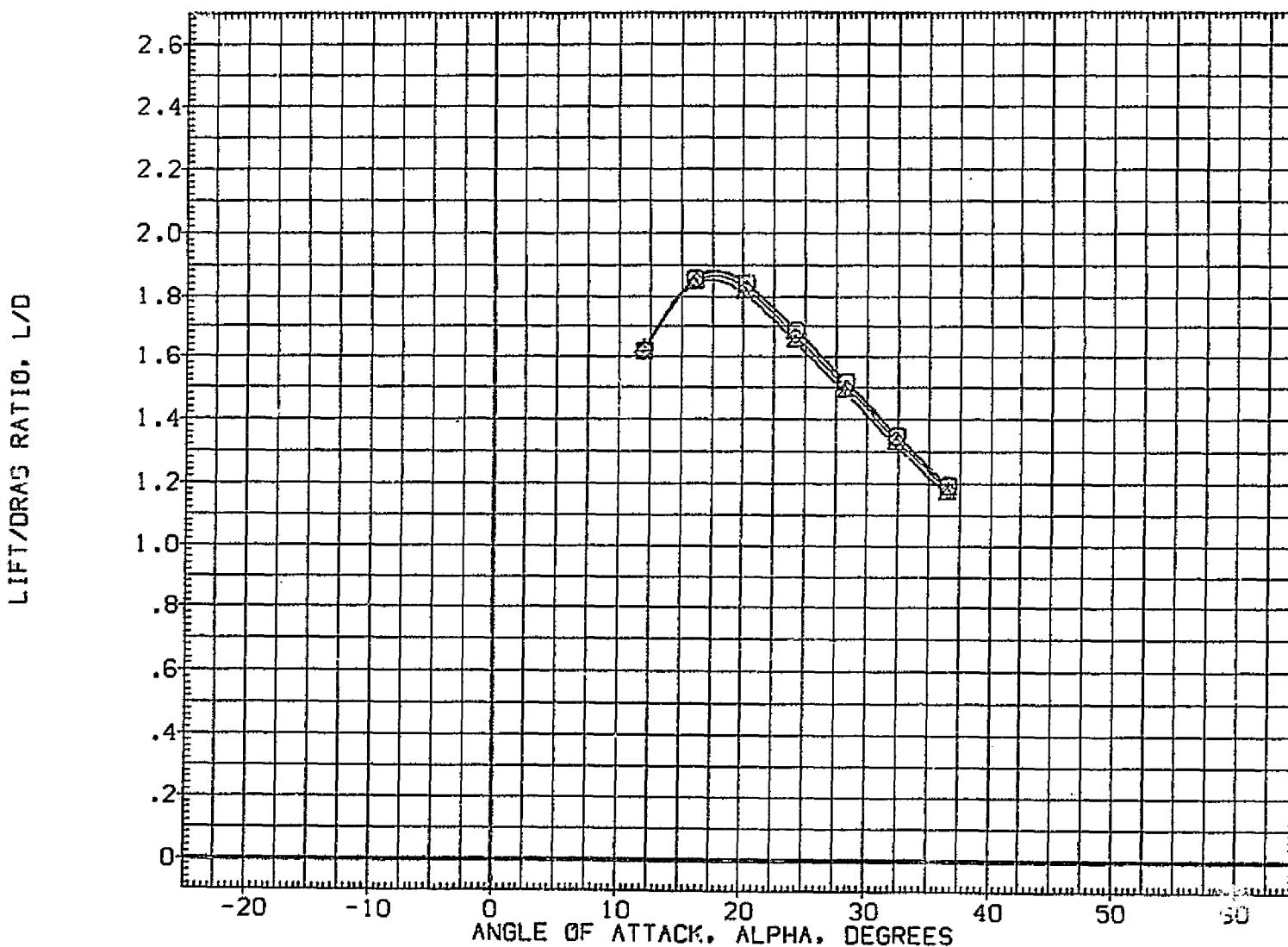
DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AILRDN	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPLNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN.
					YMRP .0000	ZMRP 375.0000 IN.
					SCALE .0100	ZD



AILERON EFFECTIVENESS

(ADMACH = 10.31)

DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BOFLAP	ELEVTR	AIRLON	REFERENCE INFORMATION
(CQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0
						YMRP .0000 IN. Y0
						ZMRP 375.0000 IN. Z0
						SCALE .0100

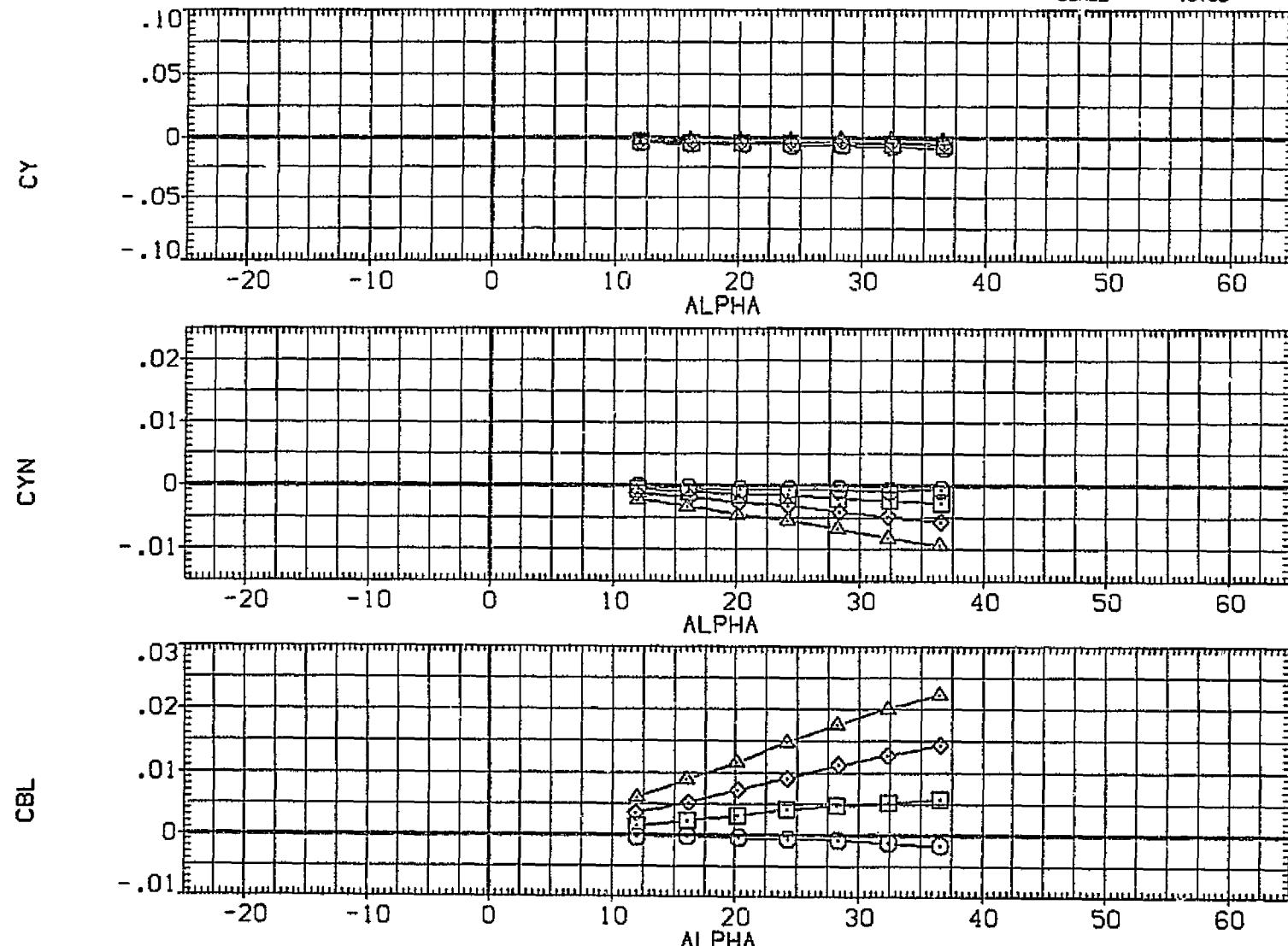


AILERON EFFECTIVENESS

(A)MACH = 10.31

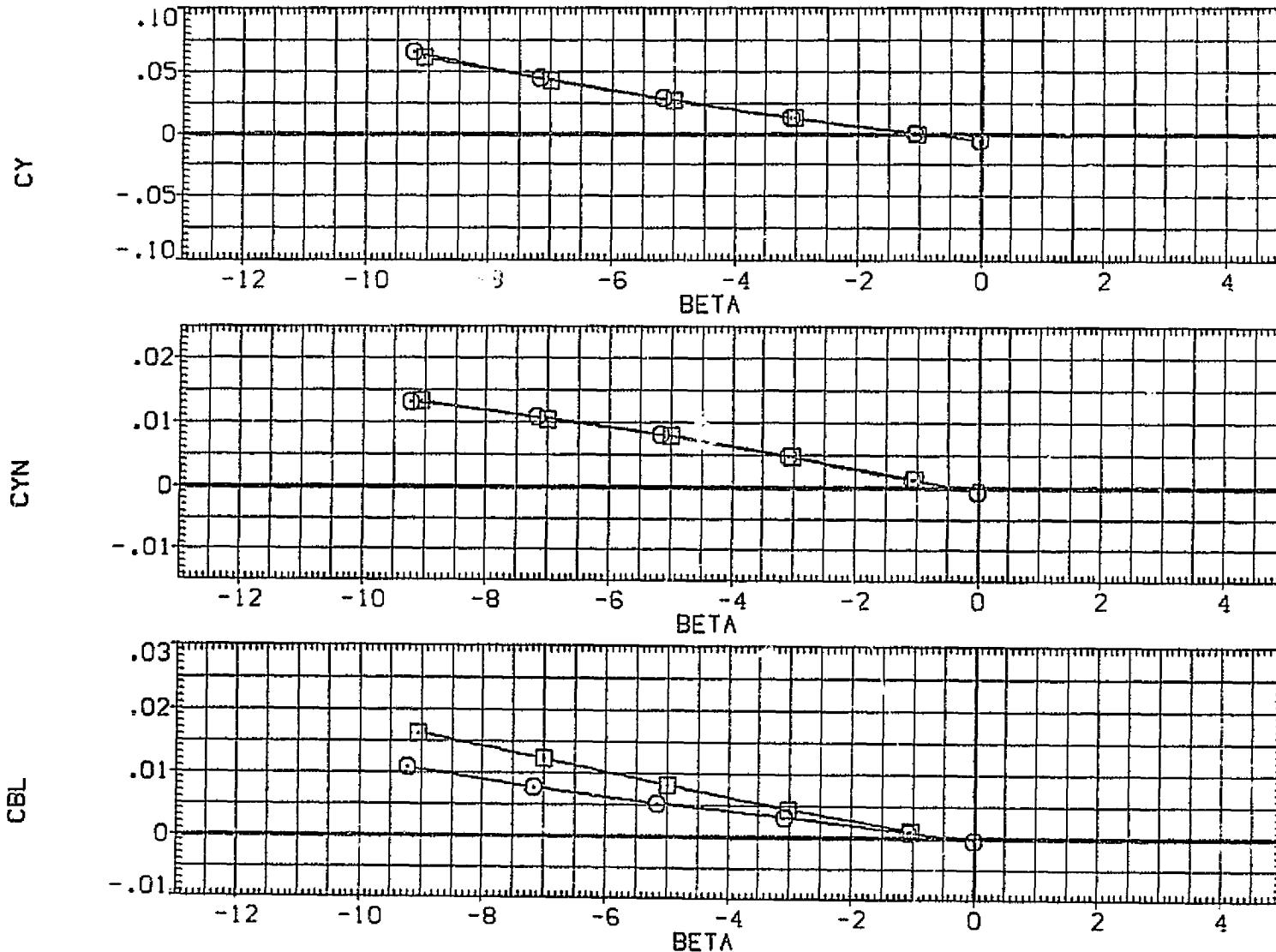
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DATA SET SYMBOL	CONFIGURATION DESCRIPTION	RN/L	BDFLAP	ELEVTR	AILRDN	REFERENCE INFORMATION
(DQJ001)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.935	.000	.000	.000	SREF 2690.0000 SQ.FT.
(CQJ024)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.990	.000	.000	5.000	LREF 474.8000 IN.
(CQJ025)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.970	.000	.000	10.000	BREF 936.7000 IN.
(CQJ026)	OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL	.993	.000	.000	15.000	XMRP 1076.7000 IN. X0 YMRP .0000 IN. Y0 ZMRP 375.0000 IN. Z0 SCALE .0100



### AILERON EFFECTIVENESS

$C_{ADMACH} = 10.31$



## LATERAL DIRECTIONAL CHARACTERISTICS

(A)RN/L = .95

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APPENDIX  
TABULATED SOURCE DATA

Tabulations of plotted data are available on request from  
Data Management Services.

DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

PAGE 1

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ001) (21 JUL 75)

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = 1078.7000 IN. XO  
 LREF = 474.0000 IN. YMMP = .0000 IN. YO  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

BETA = .000 MACH = 10.310  
 AILRDN = .000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 17/ 0 RN/L = .60 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.602	11.930	.00814	.18211	.06954	-.00728	-.00038	-.00024	-.00458	.16372	.10507	1.54343
.601	15.904	.00136	.29766	.06967	-.00422	-.00032	-.00046	-.00493	.26718	.14657	1.79836
.601	20.019	-.00826	.42726	.06974	-.00073	-.00040	-.00054	-.00505	.37757	.21179	1.78270
.600	24.086	-.01728	.58405	.06972	-.00224	-.00057	-.00051	-.00571	.50469	.30209	1.67069
.600	28.307	-.02399	.75705	.07105	-.00638	-.00074	-.00056	-.00627	.63283	.42165	1.50121
.600	32.124	-.03462	.92859	.07166	-.01408	-.00114	-.00083	-.00694	.74832	.55447	1.34962
.599	36.226	-.04281	1.11916	.07208	-.02702	-.00145	-.00050	-.00808	.86023	.71954	1.19553
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

RUN NO. 14/ 0 RN/L = .94 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.935	11.950	.00253	.18784	.06758	-.00634	-.00043	-.00039	-.00479	.16978	.10501	1.61678
.936	16.027	-.00469	.30281	.06586	-.00250	-.00040	-.00057	-.00548	.27265	.14691	1.65733
.936	20.221	-.01264	.45206	.06598	-.00081	-.00061	-.00070	-.00563	.40139	.21816	1.63985
.936	24.221	-.02017	.60954	.06842	-.00189	-.00076	-.00063	-.00635	.52791	.31247	1.68914
.936	28.324	-.02730	.78097	.06893	-.00610	-.00091	-.00079	-.00714	.65482	.43112	1.51687
.936	32.414	-.03922	.97205	.06952	-.01589	-.00144	-.00086	-.00781	.78334	.57974	1.35118
.936	36.544	-.04817	1.16639	.06949	-.03001	-.00180	-.00073	-.00912	.89571	.75034	1.19370
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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OF POOR QUALITY

DATE 23 JUL 78

**TABULATED SOURCE DATA, LARC CFHT 110 (OAGD)**

PAGE 2

OA-90 CFHT-110 RT-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ082) 21 JUL 75

#### REFERENCE DATA

## PARAMETRIC DATA

SREF =	2690.0000	50.FT.	XHRP =	1078.7000	IN. X0
LREF =	474.0000	IN.	YHRP =	.0000	IN. Y0
BREF =	936.7000	IN.	ZHRP =	375.0000	IN. Z0
SCALE =	.0100				

BETA	-5.000	MACH	10.330
AIRRON	.000	ELEVTR	.000
BDFLAP	.000	SPDRBK	55.000

RUN NO. 15/ 0 RM/L = .94 GRADIENT INTERVAL = -5.00/ 5.00

R/N/L	ALPHA	BETA	CN	CA	CLM	CEL	CYN	CY	CL	CD	L/D
.935	11.823	-5.09121	.16404	.07038	-.00505	.00454	.00512	.03738	.17550	.10864	+ 1.61538
.935	16.070	-5.14255	.31266	.06753	-.00031	.00475	.00715	.03194	.28175	.15144	+ 1.86040
.936	20.055	-5.16749	.45094	.06736	.00112	.00533	.00883	.02699	.40050	.21791	+ 1.83789
.935	24.197	-5.15807	.61463	.06984	-.00127	.00656	.00869	.02921	.53200	.31562	+ 1.68557
.935	28.355	-5.11330	.78020	.07081	-.00664	.00772	.00837	.02791	.66177	.43760	+ 1.51227
.935	32.413	-5.04347	.97512	.07062	-.01644	.00848	.00781	.02699	.78535	.58230	+ 1.34870
.936	36.680	-4.94200	1.17886	.07189	-.03262	.00909	.00708	.02710	.90249	.76185	+ 1.18461
	GRADIENT		.00000	.00800	.00600	.00000	.00000	.00000	.00100	.00000	.00000

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPSESEALED

(B04003) 121 35 75

## REFERENCE DATA

## PARAMETRIC DATA

SREF =	2690.0000 SQ.FT.	XHSP =	1076.7000 IN. X0
LREF =	474.0000 IN.	YHSP =	.0000 IN. Y0
BREF =	936.7000 IN.	ZHSP =	375.0000 IN. Z0
SCALE =	.0100		

BETA = .000 MACH = 10.370  
 AILRDN = .000 ELEVTR = .000  
 SOFLAP = .000 SPDBRK = 55.000

RUN NO. 19/ 0 RN/L = 1.24 GRADIENT INTERVAL = -5.00/ 5.00

DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OABD)

PAGE 3

OA-80 CFHT-110 RI-140A/B MODEL 72-0 OTROAPSEALD

(RQJ004) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. XO  
 LREF = 474.8000 IN. YHRP = .0000 IN. YO  
 BREF = 936.7000 IN. ZHRP = 375.0000 IN. ZO  
 SCALE = .0100

BETA = -5.000 MACH = 10.370  
 AILRON = .000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 20/ 0 RN/L = 1.24 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
1.233	12.017	-5.10056	.18258	.06498	-.00481	.00439	.00487	.03597	.17482	.10363	1.68695
1.232	16.135	-5.14693	.30492	.06348	-.00068	.90490	.00650	.03107	.27526	.14572	1.68694
1.233	20.183	-5.17551	.43778	.06310	.00080	.00530	.00810	.02611	.38913	.21027	1.65063
1.235	24.295	-5.15927	.58344	.06542	-.00114	.00651	.00775	.02704	.51398	.30380	1.69177
1.236	28.427	-5.11281	.76284	.06623	-.00654	.00776	.6731	.02693	.63934	.42138	1.51723
1.236	32.473	-5.04132	.89364	.06599	-.01654	.00851	.00695	.02585	.75729	.56017	1.35190
1.237	36.626	-4.94008	1.12993	.06721	-.03208	.00898	.00637	.02601	.86672	.72805	1.19047
GRADTENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-80 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJ005) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. XO  
 LREF = 474.8000 IN. YHRP = .0000 IN. YO  
 BREF = 936.7000 IN. ZHRP = 375.0000 IN. ZO  
 SCALE = .0100

ALPHA = 20.000 MACH = 10.330  
 AILRON = .000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 23/ 0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	BETA	ALPHA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.947	-9.223	20.08840	.42447	.06939	.00119	.01069	.01307	.06473	.37481	.21086	1.77669
.947	-7.170	20.06598	.42754	.06768	.00017	.00764	.01076	.04458	.37830	.21040	1.75801
.916	-5.161	20.06205	.43064	.06657	.00008	.00520	.00799	.02820	.38160	.21039	1.81375
.947	-3.095	20.07750	.43051	.06431	.00035	.00309	.00459	.01258	.38227	.20819	1.83619
.947	-1.070	20.07562	.43237	.06518	-.00094	.00079	.00112	.00078	.38372	.20924	1.83040
.948	-.013	20.07241	.42968	.06413	.00011	-.00050	-.00064	-.00528	.38157	.20771	1.83708
GRADIENT	-.00156	-.00011	.00001	-.00015	-.00016	-.00170	-.00580	-.00010	-.00004	-.00014	

DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (0A90)

PAGE 4

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJ008) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1078.7000 IN. X0  
 LREF = 474.0000 IN. YMRP = .0000 IN. Y0  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

ALPHA = 30.000 MACH = 10.330  
 AILRDN = .000 ELEVTR = .000  
 BDFLAP = .000 SPDWRK = 55.000

RUN NO. 247 0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	BETA	ALPHA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D	
.947	-9.048	30.88858	.88304	.07175	-.01205	.01680	.01319	.06052	.88895	.49708	1.40207	
.947	-7.001	30.88201	.88486	.07008	-.01180	.01815	.01034	.04288	.69961	.49670	1.41137	
.947	-4.891	30.88275	.88704	.06884	-.01087	.00811	.00777	.02858	.70280	.49531	1.41882	
.947	-3.021	30.85719	.85937	.06847	-.01065	.00435	.00459	.01263	.70521	.49566	1.42218	
.947	-1.035	30.85377	.86023	.06837	-.01057	.00097	.00119	-.00040	.70603	.46617	1.42297	
GRADIENT			-.00732	.00091	-.00012	-.00000	-.00180	-.00168	-.00681	.00082	.00022	.00102

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJ007) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1078.7000 IN. X0  
 LREF = 474.0000 IN. YMRP = .0000 IN. Y0  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 MACH = 10.330  
 AILRDN = .000 ELEVTR = .000  
 BDFLAP = .000 SPDWRK = 65.000

RUN NO. 257 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.980	12.285	-.00830	.19133	.06959	-.00181	-.00043	-.00034	-.00482	.17215	.10870	1.58365
.980	16.021	-.01342	.29684	.06631	-.00046	-.00034	-.00060	-.00517	.26684	.14623	1.82477
.981	20.420	-.02295	.44762	.06523	.00151	-.00060	-.00060	-.00574	.39673	.21730	1.82569
.981	24.222	-.03052	.60030	.06853	-.00195	-.00073	-.00046	-.00641	.51933	.30879	1.88185
.982	28.282	-.03744	.76665	.06932	-.00262	-.00092	-.00064	-.00704	.64276	.42341	1.51806
.982	32.439	-.04760	.95489	.06973	-.01558	-.00136	-.00065	-.00787	.76902	.57021	1.34865
.982	36.466	-.05555	1.14298	.06887	-.02942	-.00164	-.00064	-.00903	.87840	.73455	1.19583
GRADIENT			.00000	.00000	-.00000	-.00000	-.00000	-.00000	.00000	.00000	.00000

DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

PAGE 5

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPNSEAL

(RQJ008) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHYP = 1076.7000 IN. X0  
 LREF = 474.0000 IN. YHYP = .0000 IN. Y0  
 BREF = 936.7000 IN. ZHYP = 375.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

BETA = -5.000 MACH = 10.330  
 AILRON = .000 ELEVTR = .000  
 BDFLAP = .000 SPDWRK = 85.000

RUN NO. 26/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.985	11.834	-5.05080	.18727	.07280	.00078	.00484	.00395	.03803	.16838	.10968	1.55533
.984	16.042	-5.10499	.30849	.06822	.00162	.00498	.00649	.03221	.27570	.15028	1.83488
.984	20.220	-5.13125	.44632	.06660	.00140	.00536	.00657	.02666	.39580	.21675	1.82605
.984	24.275	-5.11785	.60719	.06959	-.00076	.00666	.00807	.02828	.52489	.31306	1.67663
.984	28.415	-5.07446	.77701	.07042	-.00598	.00779	.00778	.02787	.64989	.43167	1.50551
.983	32.460	-5.00512	.96104	.07079	-.01519	.00873	.00700	.02707	.77290	.57553	1.34294
.983	36.492	-4.91132	1.14758	.07222	-.03038	.00911	.00655	.02707	.87972	.74059	1.18785
GRADIENT		.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD

(RQJ009) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHYP = 1076.7000 IN. X0  
 LREF = 474.0000 IN. YHYP = .0000 IN. Y0  
 BREF = 936.7000 IN. ZHYP = 375.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 MACH = 10.370  
 AILRON = .000 ELEVTR = .000  
 BDFLAP = .000 SPDWRK = 85.000

RUN NO. 27/ 0 RN/L = 1.21 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
1.214	12.059	.00781	.18700	.05747	-.00103	-.00048	-.00048	-.00521	.16877	.10505	1.60657
1.213	16.095	.00244	.30389	.06575	.00022	-.00042	-.00074	-.00543	.27356	.14737	1.85634
1.212	20.251	-.00517	.44426	.06363	.00228	-.00067	-.00077	-.00587	.39478	.21347	1.24935
1.211	24.261	-.01633	.60360	.06617	-.00095	-.00089	-.00051	-.00682	.52318	.30839	1.69652
1.210	28.405	-.02417	.77631	.06670	-.00656	-.00095	-.00080	-.00743	.65112	.42796	1.52147
1.208	32.375	-.03093	.95687	.06683	-.01599	-.00146	-.00085	-.00816	.77235	.56881	1.35784
1.207	35.685	-.04179	1.15952	.06569	-.03144	-.00180	-.00080	-.00907	.89001	.74621	1.19271
GRADIENT		.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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TABULATED SOURCE DATA, LARC CFHT 150 (GA9D)

PAGE 6

0A-80 CFHT-110 R1-140A/B MODEL 72-0 OTRQAPSEALD

(CRAJ010) ( 21 JUL 75 )

## REFERENCE DATA

SREF =	2690.0000 SQ.FT.	XHPR =	1078.7000 IN. X0
LREF =	474.8000 IN.	YHPR =	.0000 IN. Y0
BREF =	936.7000 IN.	ZHPR =	375.0000 IN. Z0
SCALE =	.0100		

BETA = -5.000 MACH = 10.370  
 AIRRN = .000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 85.000

RUN NO. 28/0 RN/L = 1.21 GRADIENT INTERVAL = -5.00/ 5.00

0A-80 CFHT-110 RF-140A/B MODEL 72-0 QTRGAPUNSEAL

(RQJ0111) 421 JUL 75 1

## REFERENCE DATA

SREF = 2550.0000 SQ.FT. XHPR = 1075.7000 IN. X0  
 LREF = 474.0000 IN. YHPR = .0000 IN. Y0  
 BREF = 936.7000 IN. ZHPR = 375.0000 IN. Z0  
 SCALE = .0100

BETA	.000	MACH	=	10.330
ATLIRON	.000	ELEVTR	=	.000
BDLFLAP	-11.700	SPDRBK	=	55.000

RUN NO. 13/0 R/N/L = .85 GRADIENT INTERVAL = -5.00/ 5.0



DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

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OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPNSEAL

(RQJ012) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT.	XHPR = 1078.7000 IN. X0	BETA = .000	MACH = 10.330
LREF = 474.8000 IN.	YHPR = .0000 IN. Y0	AIRFON = .000	ELEVTR = .000
BREF = 936.7000 IN.	ZHPR = 375.0000 IN. Z0	BDFLAP = 16.300	SPDBRK = 55.000
SCALE = .0100			

RUN NO. 12/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.969	12.260	.00188	.19369	.06782	-.01176	-.00039	-.00038	-.00506	.18072	.10870	1.66257
.989	16.073	-.00268	.31255	.06717	-.01154	-.00040	-.00052	-.00546	.28173	.15107	1.86486
.988	20.118	-.00942	.46022	.06846	-.01326	-.00055	-.00068	-.00582	.40860	.22258	1.83575
.989	24.111	-.01608	.62493	.07289	-.02135	-.00073	-.00051	-.00672	.59053	.32182	1.67992
.989	28.281	-.02582	.80120	.07388	-.03071	-.00092	-.00080	-.00733	.67071	.44444	1.50912
.990	32.357	-.03595	.89414	.07590	-.04486	-.00138	-.00087	-.00785	.70915	.59617	1.34048
.990	36.425	-.04563	1.19179	.07782	-.06287	-.00182	-.00072	-.00909	.91275	.77027	1.18498
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPNSEALED

(RQJ013) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT.	XHPR = 1076.7000 IN. X0	BETA = .000	MACH = 10.330
LREF = 474.8000 IN.	YHPR = .0000 IN. Y0	AIRFON = .000	ELEVTR = 10.000
BREF = 936.7000 IN.	ZHPR = 375.0000 IN. Z0	BDFLAP = 16.300	SPDBRK = 55.000
SCALE = .0100			

RUN NO. 6/ 0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.960	11.927	-.00214	.20711	.07096	-.02626	-.00043	-.00034	-.00478	.18797	.11223	1.67483
.961	12.011	-.00635	.33338	.07155	-.03226	-.00036	-.00054	-.00540	.30071	.16073	1.87091
.960	20.083	-.01433	.48570	.07380	-.04043	-.00046	-.00066	-.00602	.43107	.23564	1.82939
.961	24.002	-.02319	.65514	.07999	-.05997	-.00065	-.00058	-.00660	.56623	.33969	1.66690
.960	28.259	-.03004	.84785	.08562	-.07168	-.00090	-.00074	-.00739	.70527	.47683	1.48118
.960	32.253	-.03847	1.03850	.09037	-.09124	-.00133	-.00082	-.00802	.83004	.63063	1.31621
.961	36.207	-.04873	1.23265	.09501	-.11377	-.00183	-.00068	-.00898	.93848	.80479	1.16612
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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TABULATED SOURCE DATA, LARC CFHT 110 (DA90)

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QA-BB CFHT-110 RI-140A/B MODEL 72-0 OTROAPSEALD

(RQJ013) ( 21 JUL 75 )

## REFERENCE DATA

### **PARAMETRIC DATA**

SREF	=	2690.0000	SQ.FT.	XMRP	=	1078.7000	IN.	X0
LREF	=	474.8000	IN.	YMRP	=	.0000	IN.	Y0
BREF	=	836.7000	IN.	ZMRP	=	375.0000	IN.	Z0
SCALE	=	.0100						

BETA = .008 MACH = 10.330  
 AIRDN = .600 ELEVTR = 10.000  
 BDFLAP = 16.300 SPDBRK = 55.000

RUN NO. 10/ 0 RN/L = 1.25 GRADIENT INTERVAL = -5.00/ 5.00

0A-90 CEHT-110 B1-140A/B MODEL 72-D QTRGARSEALD

(BCN-014) 121-44-75

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2890.0000 SQ.FT. XMRP = 1076.7000 IN. X0  
 LREF = 474.0000 IN. YMRP = .0000 IN. Y0  
 BREF = 935.7000 IN. ZMRP = 375.0000 IN. Z0  
 SCALE = .0100

BETA	=	-5.000	MACH	=	10.330
AIRRON	=	.000	ELEVTR	=	10.000
ROSLAB	=	16.300	SPDRBK	=	55.000

RUN NO. 7/0 RN/L = .96 GRADIENT INTERVAL = -5.00/ 5.00

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (OABO)

PAGE 9

0A-80 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPSEALD

(RQJ014) ( 21 JUL 75 )

## REFERENCE DATA

SREF	=	2690.0000	SQ.FT.	XHPR	=	1076.7000	IN. X0
LREF	=	474.8000	IN.	YHPR	=	.0000	IN. Y0
BREF	=	936.7000	IN.	ZHPR	=	375.0000	IN. Z0
SCALE	=	.0100					

BETA = -5.000 MACH = 10.330  
 AILRDN = .000 ELEVTR = 10.000  
 BDFLAP = 18.300 SPD9RK = 55.000

RUN NO. 1179 RN/L = 1.25 GRADIENT INTERVAL = -5.00/ 5.00

0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTROGAPUNSEAL

(RQJ015) 6 21 JUL 75

## **REFERENCE DATA**

SREF =	2690.0000 SQ.FT.	XMRP =	1076.7000 IN. X0
LREF =	474.8000 IN.	YMRP =	.0000 IN. Y0
BREF =	836.7000 IN.	ZMRP =	375.0000 IN. Z0
SCALE =	.0100		

BETA = .000 MACH = 10.330  
 AIRRON = .000 ELEVTR = 10.000  
 ROLLFLAP = 16.300 SPDBRK = 55.000

RUN NO. = 84-2 RUN/L = -0.5 GRADIENT INTERVAL = -5.00/-5.00

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (OAB0)

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OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJ01B) ( 21 JUL 75 )

## REFERENCE DATA

SREF	2690.0000	SQ.FT.	XHPR	1076.7000	IN. X0
LREF	474.6000	IN.	YHPR	.0000	IN. Y0
BREF	936.7000	IN.	ZHPR	375.0000	IN. Z0
SCALE	.0100				

BETA = -5.000 MACH = 10.330  
 AIRRON = .000 ELEVTR = 10.000  
 BOFLAP = 16.300 SPOBRK = 55.000

RUN NO. 8/0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTG CAPULSEAL

(RDJD17) ( 21 JUL 75 )

## REFERENCE DATA

SREF	=	2690.0000 SQ.FT.	XMAP	=	1076.7000 IN. X0
LREF	=	474.8000 IN.	YMAP	=	.0000 IN. Y0
BREF	=	936.7000 IN.	ZMAP	=	375.0000 IN. Z0
SCALE	=	.0100			

BETA =	.000	MACH =	10.310
AIRRON =	.000	ELEVTR =	15.000
BDFLAP =	16.300	SPDRK =	55.000

RUN NO. = 411 D BNVL = -162 GRADIENT INTERVAL = -5.00% 5.0



DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

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OA-80 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJD17) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO  
 LREF = 474.8000 IN. YMMP = .0000 IN. YO  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

BETA = .000 MACH = 10.310  
 AILRDN = .000 ELEVTR = 15.000  
 BDFLAP = 16.300 SPDBRK = 55.000

RUN NO. 38/ 0 RN/L = .88 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.963	11.889	-.00359	.22295	.07552	-.03903	-.00033	-.00033	-.00484	.20261	.11683	1.69075
.963	15.921	-.01164	.35283	.07800	-.04955	-.00029	-.00047	-.00546	.31789	.17180	1.85042
.883	20.029	-.01941	.51690	.08295	-.06265	-.00044	-.00060	-.00569	.45722	.25497	1.79325
.962	24.090	-.02813	.68960	.09113	-.08056	-.00058	-.00049	-.00684	.59234	.36466	1.62436
.962	28.104	-.03600	.87608	.09937	-.09967	-.00070	-.00069	-.00746	.72645	.49947	1.45443
.962	32.181	-.04471	1.07294	.10583	-.12182	-.00108	-.00067	-.00807	.85190	.66076	1.28928
.961	36.205	-.05556	1.27470	.11249	-.14682	-.00146	-.00062	-.00918	.96212	.84371	1.14034
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

RUN NO. 39/ 0 RN/L = 1.24 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
1.244	11.889	-.00183	.22154	.07305	-.03911	-.00037	-.00044	-.00529	.20174	.11712	1.72256
1.243	15.959	-.01069	.35774	.07698	-.04954	-.00036	-.00058	-.00570	.32279	.17237	1.87265
1.243	19.941	-.01752	.51328	.08086	-.06163	-.00046	-.00072	-.00613	.45493	.25107	1.81196
1.242	24.105	-.02551	.69515	.09045	-.08103	-.00065	-.00055	-.00713	.58759	.36646	1.63069
1.240	28.170	-.03177	.88370	.09709	-.10099	-.00074	-.00076	-.00782	.73320	.50278	1.45829
1.240	32.213	-.04262	1.08121	.10430	-.12370	-.00116	-.00076	-.00861	.85919	.66461	1.29275
1.240	36.341	-.05101	1.28498	.11129	-.15013	-.00156	-.00071	-.00956	.96911	.85111	1.13684
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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TABULATED SOURCE DATA, LARC CFHT 110 (OABD)

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0A-90 CFHT-110 R1-140A/B MODEL 72-D OTROCAPSEALED

(RQJ018) ( 21 JUL 75

## **REFERENCE DATA**

SREF	2690.0000	SQ.FT.	XMRP	1076.7000	IN.	X0
LREF	474.8000	IN.	YMRP	.0000	IN.	Y0
BREF	936.7000	IN.	ZMRP	375.0000	IN.	Z0
SCALE	.0100					

#### PARAMETRIC DATA

BETA = .000 MACH = 10.370  
 AIRRON = .000 ELEVTR = 15.000  
 RDELAP = 16.300 SPDBRK = 55.000

RUN NO. 487 D RNL = 1.20 GRADIENT INTERVAL = -5.00/ 5.00

0A-90 CEHT-110 BI-140A/B M0051 72-0 OTB04PUNSEAL

(B00019) 6-21-84-75

## REFERENCE DATA

SREF	=	2690.0000	SQ.FT.	XHRP	=	1076.7000	IN.	XO
LREF	=	474.8000	IN.	YMRP	=	.0000	IN.	YO
BREF	=	936.7000	IN.	ZMRP	=	375.0000	IN.	ZD
SCALE	=	.0100						

#### **PARTICULARS DATA**

BETA = .000 MACH = 10.330  
 AIRRDN = .000 ELEVTR = -10.000  
 ROLLAR = -11.200 SPDBRK = 55.000

RUN NO. 36/0 RN/L = .98 GRADIENT INTERVAL = -5.00/ 5.00

DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

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OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ020) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO  
 LREF = 474.8000 IN. YMRP = .0000 IN. YO  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 MACH = 10.330  
 AIRRON = .000 ELEVTR = -20.000  
 BDPLAP = -11.700 SPDGRK = 55.000

RUN NO. 35/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.991	11.892	-.00090	.16987	.06614	.00375	-.00021	-.00033	-.00437	.15251	.09986	1.52715
.991	16.123	-.00744	.28660	.05460	.01249	-.00011	-.00054	-.00490	.25163	.13998	1.79759
.992	20.351	-.01831	.41708	.06481	.02250	-.00017	-.00068	-.00524	.36848	.20581	1.79039
.992	24.301	-.02467	.58125	.06679	.02877	-.00024	-.00055	-.00621	.48403	.29184	1.65984
.992	28.388	-.03035	.71691	.06720	.03352	-.00036	-.00086	-.00674	.59874	.39997	1.49698
.992	32.616	-.03980	.89257	.06691	.03529	-.00061	-.00083	-.00827	.71668	.53621	1.33658
.992	36.615	-.04745	1.07007	.06580	.03292	-.00093	-.00094	-.00829	.81966	.69104	1.18612
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ021) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XMRP = 1076.7000 IN. XO  
 LREF = 474.8000 IN. YMRP = .0000 IN. YO  
 BREF = 936.7000 IN. ZMRP = 375.0000 IN. ZO  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 MACH = 10.310  
 AIRRON = .000 ELEVTR = -40.000  
 BDPLAP = -11.700 SPDGRK = 55.000

RUN NO. 32/ 0 RN/L = .60 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.601	12.209	-.00831	.16740	.07453	.00823	-.00013	-.00021	-.00431	.14786	.10824	1.36696
.600	16.181	-.01463	.28113	.07351	.01677	-.00004	-.00040	-.00453	.24951	.14894	1.67523
.600	20.056	-.02119	.39893	.07276	.02631	-.00001	-.00054	-.00516	.34979	.20518	1.70499
.599	24.116	-.02972	.54665	.07333	.03483	-.00011	-.00043	-.00565	.46897	.29028	1.61657
.599	28.246	-.03590	.70752	.07530	.04229	-.00019	-.00063	-.00604	.58761	.40122	1.46455
.598	32.318	-.04581	.87668	.07815	.04753	-.00045	-.00070	-.00831	.70809	.53301	1.31348
.598	36.319	-.05275	1.04149	.07549	.04899	-.00069	-.00046	-.00760	.79445	.67768	1.17231
GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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TABULATED SOURCE DATA, LARC CFHT 110 (0A90)

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0A-90 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ0211) ( 21 JUL 75 )

#### REFERENCE DATA

SREF =	2690.0000	50.FT.	XHPP =	1076.7000	IN. X0
LREF =	474.0000	IN.	YHPP =	.0000	IN. Y0
BREF =	836.7000	IN.	ZHPP =	375.0000	IN. Z0
SCALE =	.0100				

BETA = .000 MACH = 10.310  
 AIRRON = .000 ELEVTR = -40.000  
 BDFLAP = -11.700 SPDBRK = 55.000

RUN NO. 31/ 0 RN/L = .99 GRADIENT INTERVAL = -5.00/ 5.00

QA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPSEALED

(RDJ022) 121 M. 75

## REFERENCE DATA

SREF =	2690.0000 SQ.FT.	XHPR =	1076.7000 IN. X0
LREF =	474.8000 IN.	YHPR =	.0000 IN. Y0
BREF =	938.7000 IN.	ZHPR =	375.0000 IN. Z0
SCALE =	.0100		

BETA = .000	MACH = 10.370
AIRRON = .000	ELEVTR = -40.000
BDFLAP = -11.700	SPD6BK = 55.000

RUN NO. 33/0 R/H/L = 1.23 GRADIENT INTERVAL = -5.00/ 5.00

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## TABULATED SOURCE DATA, LARC CFHT 110 (0A90)

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OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPSEALED

(RQJ023) ( 21 JUL 76 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. X0  
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0  
 BREF = 938.7000 IN. ZHRP = 376.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

BETA = -5.000 MACH = 10.370  
 AILRDN = .000 ELEVTR = -40.000  
 BDFLAP = -11.700 SPDBRK = 55.000

RUN NO. 34/ 0 RN/L = 1.63 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
1.218	12.013	-5.09460	.17122	.06937	.01140	.00365	.00441	.03785	.15303	.10349	1.47870
1.220	16.178	-5.14883	.27832	.06682	.02007	.00411	.00625	.03297	.24869	.14171	1.75486
1.222	20.324	-5.16936	.41269	.06871	.02833	.00462	.00740	.03062	.36313	.20778	1.74773
1.222	24.549	-5.15690	.55661	.06907	.03579	.00576	.00789	.02771	.47760	.29408	1.62404
1.223	28.621	-5.10934	.71893	.07001	.04177	.00684	.00751	.02778	.59513	.40791	1.46141
1.225	32.771	-5.03610	.88127	.07087	.04507	.00767	.00682	.02748	.70265	.53661	1.30942
1.226	36.842	-4.93734	1.04785	.07022	.04476	.00802	.00655	.02652	.79648	.68449	1.16360
GRADIENT		.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

OA-90 CFHT-110 RI-140A/B MODEL 72-0 OTROAPUNSEAL

(RQJ024) ( 21 JUL 76 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHRP = 1076.7000 IN. X0  
 LREF = 474.8000 IN. YHRP = .0000 IN. Y0  
 BREF = 938.7000 IN. ZHRP = 376.0000 IN. Z0  
 SCALE = .0100

## PARAMETRIC DATA

BETA = .000 MACH = 10.330  
 AILRDN = 5.000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 44/ 0 RN/L = .89 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLM	CBL	CYN	CY	CL	CD	L/D
.990	11.958	-.00638	.18598	.06682	-.00686	.00130	-.00074	-.00400	.16810	.10391	1.61779
.990	16.070	-.01152	.30052	.06538	-.00342	.00220	-.00107	-.00433	.27069	.14593	1.65419
.990	20.107	-.01457	.44283	.06549	-.00034	.00303	-.00147	-.00430	.39333	.21374	1.84026
.990	24.160	-.02013	.59788	.06827	-.00343	.00398	-.00165	-.00493	.51758	.30700	1.68595
.990	28.230	-.01781	.78547	.06888	-.00755	.00459	-.00212	-.00532	.64184	.42275	1.51824
.990	32.381	-.01917	.95433	.06991	-.01676	.00512	-.00246	-.00577	.76849	.57014	1.34791
.990	36.560	-.01497	1.14831	.06955	-.03082	.00576	-.00284	-.00667	.88087	.73996	1.19042
GRADIENT		.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000

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DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CENT 110 (DAS90)

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0A-80 CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJ025) ( 21 JUL 75 )

## REFERENCE DATA

SREF	-	2680.0000	SQ.FT.	XMRP	-	1078.7000	IN.	XO
LREF	-	474.0000	IN.	YMRP	-	.0000	IN.	YO
BREF	-	935.7000	IN.	ZHRP	-	375.0000	IN.	ZO
SCALE	-	0100						

BETA = .000 MACH = 10.330  
 AIRRON = 10.000 ELEVTR = .000  
 BDFLAP = .000 SPDBRK = 55.000

RUN NO. 37/0 RN/L = .67 GRADIENT INTERVAL = -3.00/ 3.00

9A-90 CEHT-110 SI-140A/B MODEL- 72-0 OT804B INSEAL

(B0-1036) 6 21 13 75 1

## REFERENCE DATA

SREF =	2890.0000 SQ.FT.	XMRP =	1078.7000 IN. X0
LREF =	474.8800 IN.	YMRP =	.0000 IN. Y0
BREF =	936.7000 IN.	ZMRP =	375.0000 IN. Z0
SCALE =	.0100		

BETA = .000 MACH = 10.330  
AILRDN = 15.000 ELEVTR = .000  
ROLLAD = .000 GEARUP = FF 000

RUN NO. 43/0 RN/L = .99 GRADIENT INTERVAL = -5.00% 0.00



DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OA90)

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OA-90 CFHT-110 R1-140A/B MODEL 72-0 OTROAPUNSEAL

(R0JR01) ( 21 JUL 75 )

## REFERENCE DATA

SREF = 2690.0000 SQ.FT. XHAP = 1076.7000 IN. XO  
LREF = 474.0000 IN. YHAP = .0000 IN. YO  
BREF = 836.7000 IN. ZHAP = 375.0000 IN. ZO  
SCALE = .0100

## PARAMETRIC DATA

BETA = .000 HACH = 10.310  
AILRON = .000 ELEVTR = .000  
BDFLAP = .000 SPDGRK = 55.000

RUN NO. 47/0 RN/L = .60 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.698	11.945	-.00767	.18283	.07023	-.00730	-.00033	-.00021	-.00421	.16414	.10651	1.59113
.598	15.957	-.01305	.29950	.06981	-.00427	-.00027	-.00035	-.00456	.26877	.14948	1.79828
.598	20.319	-.02274	.43751	.07040	-.00119	-.00036	-.00048	-.00491	.38584	.21794	1.77042
.598	24.271	-.03309	.58953	.06997	-.00258	-.00057	-.00040	-.00543	.50875	.30516	1.66174
.598	28.220	-.04024	.75701	.07125	-.00652	-.00075	-.00048	-.00615	.63333	.42075	1.50526
.598	32.418	-.04958	.84436	.07218	-.01538	-.00110	-.00055	-.00667	.75851	.56717	1.33737
.598	36.234	-.05550	1.11649	.07258	-.02685	-.00137	-.00048	-.00760	.85768	.71848	1.19373
GRADIENT	.00000	.00000	.00000	.00000	-.00000	-.00000	-.00000	-.00000	.00000	.00000	.00000

RUN NO. 45/0 RN/L = .85 GRADIENT INTERVAL = -5.00/ 5.00

RN/L	ALPHA	BETA	CN	CA	CLH	CBL	CYN	CY	CL	CD	L/D
.851	11.959	-.00 .50	.18391	.06813	-.00625	-.00037	-.00035	-.00440	.16622	.10280	1.61691
.851	16.021	-.01228	.29913	.05485	-.00245	-.00034	-.00051	-.00496	.26981	.14489	1.86080
.851	20.174	-.02013	.44090	.06491	.00063	-.00050	-.00065	-.00503	.39147	.21299	1.83798
.851	24.403	-.03095	.60800	.06717	-.00182	-.00067	-.00060	-.00584	.52411	.31153	1.68238
.851	28.272	-.03769	.76489	.06760	-.00592	-.00095	-.00076	-.00622	.64162	.42183	1.52103
.851	32.406	-.04568	.85307	.06938	-.01528	-.00123	-.00083	-.00687	.76801	.56850	1.35095
.851	36.458	-.05623	1.14117	.06916	-.02870	-.00163	-.00073	-.00784	.87733	.73295	1.19698
GRADIENT	.00000	.00000	.00000	.00000	-.00000	-.00000	-.00000	-.00000	.00000	.00000	.00000

DATE 23 JUL 75

TABULATED SOURCE DATA, LARC CFHT 110 (DA90)

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DA-90 CRMT-110 RI-140A/B MODEL 72-0 CTRGAPUNSEAL

(RECORRIDO) ( 21 JUL 75 )

## REFERENCE DATA

SREF =	2890.0000	SQ.FT.	XHPR =	1078.7000	IN. X0
LREF =	474.8000	IN.	YHPR =	.0000	IN. Y0
BREF =	936.7000	IN.	ZHPR =	375.0000	IN. Z0
SCALE =	.0100				

BETA = .000 RACH = 10.330  
 AIRRON = .000 ELEVTR = .000  
 BDFLAP = .000 SPOBPK = 55.000

RUN NO. 217-0 PN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00

0A-90 CFHT-110 RI-140A/B MODEL 72-Q OTRQAPUNSEAL

(REVERSE) ( 21 J.S. 75 )

## REFERENCE DATA

BREF	=	2890.0000	SQ.FT.	XMAP	=	1078.7000	IN.	X0
LREF	=	474.6000	IN.	YMAP	=	.0000	IN.	Y0
BREF	=	938.7000	IN.	ZMAP	=	375.0000	IN.	Z0
SCALE	=	.0100						

BETA =	-5.000	MACH =	10.330
AIRRON =	.000	ELEVTR =	.000
BOEFLAP =	.000	SPD68K =	55.000

RUN NO. 48/ 0 RN/L = .95 GRADIENT INTERVAL = -5.00/ 5.00



DATE 23 JUL 75

## TABULATED SOURCE DATA, LARC CFHT 110 (OABO)

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OA-BD CFHT-110 RI-140A/B MODEL 72-0 OTRGAPUNSEAL

(RQJRR2) ( 21 JUL 75 )

## REFERENCE DATA

## PARAMETRIC DATA

SREF = 2690.0000 SQ.FT. XHPP = 1075.7000 IN. XO  
LREF = 474.8000 IN. YHPP = .0000 IN. YO  
BREF = 935.7000 IN. ZHPP = 375.0000 IN. ZO  
SCALE = .0100

BETA = -5.000 MACH = 10.330  
AILRON = .000 ELEVTR = .000  
BOFLAP = .000 SPDBRK = 55.000

RN/L	RUN NO.	22/ 0	RN/L =	.95	GRADIENT INTERVAL = -5.00/ 5.00							
.951	11.818	-5.06512	.18753	.06856	-.00523	.00448	.00480	.03641	.16952	.10551	1.60661	
.951	15.962	-5.11980	.29854	.08544	-.00082	.00470	.00577	.03120	.26999	.14529	1.85830	
.951	20.206	-5.14372	.44094	.08543	.00050	.00526	.00851	.02619	.39121	.21370	1.83061	
.951	24.281	-5.12979	.59679	.06799	-.00158	.00644	.00841	.02704	.51604	.30739	1.67680	
.951	28.374	-5.08980	.76350	.06871	-.00662	.00759	.00810	.02675	.63912	.42330	1.50986	
.951	32.404	-5.02158	.94268	.06860	-.01563	.00832	.00753	.02566	.76914	.56309	1.34817	
.951	36.652	-4.92149	1.13907	.07012	-.03098	.00887	.00883	.02620	.87199	.73622	1.18441	
	GRADIENT	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000	

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